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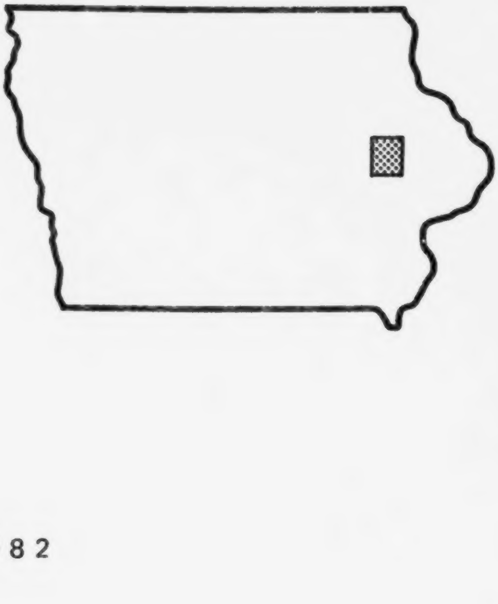
ORIGINAL

FLOOD INSURANCE STUDY

COMPLETED
268

COUNTY OF LINN, IOWA

UNINCORPORATED AREAS



JUNE 15, 1982

Federal Emergency Management Agency

COMMUNITY NUMBER - 190829

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FLOOD INSURANCE STUDY

COUNTY OF LINN, IOWA
UNINCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Unincorporated Areas of Linn County, Iowa, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study will be used to convert the Unincorporated Areas of Linn County, Iowa to the regular program of flood insurance by the Federal Emergency Management Agency (FEMA). Local and regional planners will use this study in their efforts to promote sound flood plain management.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than those on which these Federally-supported studies are based. These criteria take precedence over the minimum Federal criteria for purposes of regulating development in the flood plain, as set forth in the Code of Federal Regulations at 44 CFR, 60.3 (d). In such cases, however, it shall be understood that the state (or other jurisdictional agency) shall be able to explain these requirements and criteria.

1.2 Authority and Acknowledgements

The source of authority for this Flood Insurance Study is the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Kirkham, Michael and Associates and Wallace, Holland, Kastler, Schmitz and Company for the Federal Emergency Management Agency, under Contract No. CN 78-1154. This study was completed in July 1980 and covered all significant flooding sources affecting Linn County, Iowa.

1.3 Coordination

Community base map selection and the identification of streams requiring detailed study were performed in meetings attended by personnel of FEMA, the Study Contractor and officials of Linn County, Iowa in March 1978. Hydrologic analyses and flood profiles for the detailed study streams were developed by the Study Contractor in conjunction with available flood data on these streams.

On March 5, 1981, an intermediate meeting was held and the flood elevations, flood boundaries and floodway delineations were reviewed with officials of the community and the Iowa Natural Resources Council.

On January 19, 1982, the results of the work by the Study Contractor were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Linn County, Iowa. The area of study is shown on the Vicinity Map (Figure 1).

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction for the next five years, through July 1985. The scope and methods of study were proposed to and agreed upon by FEMA and Linn County.

The flooding sources studied by detailed methods are listed below:

a. Cedar River, from the south county boundary to upstream of confluence with Big Creek, and from upstream of confluence with Morgan Creek to the west county boundary, approximately 28.8 miles;

b. Wapsipinicon River, from the east county boundary to the southeast corporate limits of Central City, and from the northwest corporate limits of Central City to the north county boundary, approximately 31.8 miles;

c. Martins Creek, from mouth at Big Creek to about 800 feet upstream of Chicago, Milwaukee, St. Paul and Pacific Railroad, approximately 3.3 miles;

d. Big Creek, from mouth to the Cedar River to about 2.6 miles upstream of Chicago, Milwaukee, St. Paul and Pacific Railroad; approximately 12.7 miles;

e. Blue Creek, from the mouth at the Cedar River to the confluence with East Blue Creek, approximately 1.3 miles;

f. East Blue Creek, from confluence with Blue Creek to about 1,800 feet upstream of County Road E35, approximately 8.6 miles;

g. Indian Creek, from north corporate limits of City of Marion to about 1.3 miles upstream of County Road E28, approximately 11.5 miles;

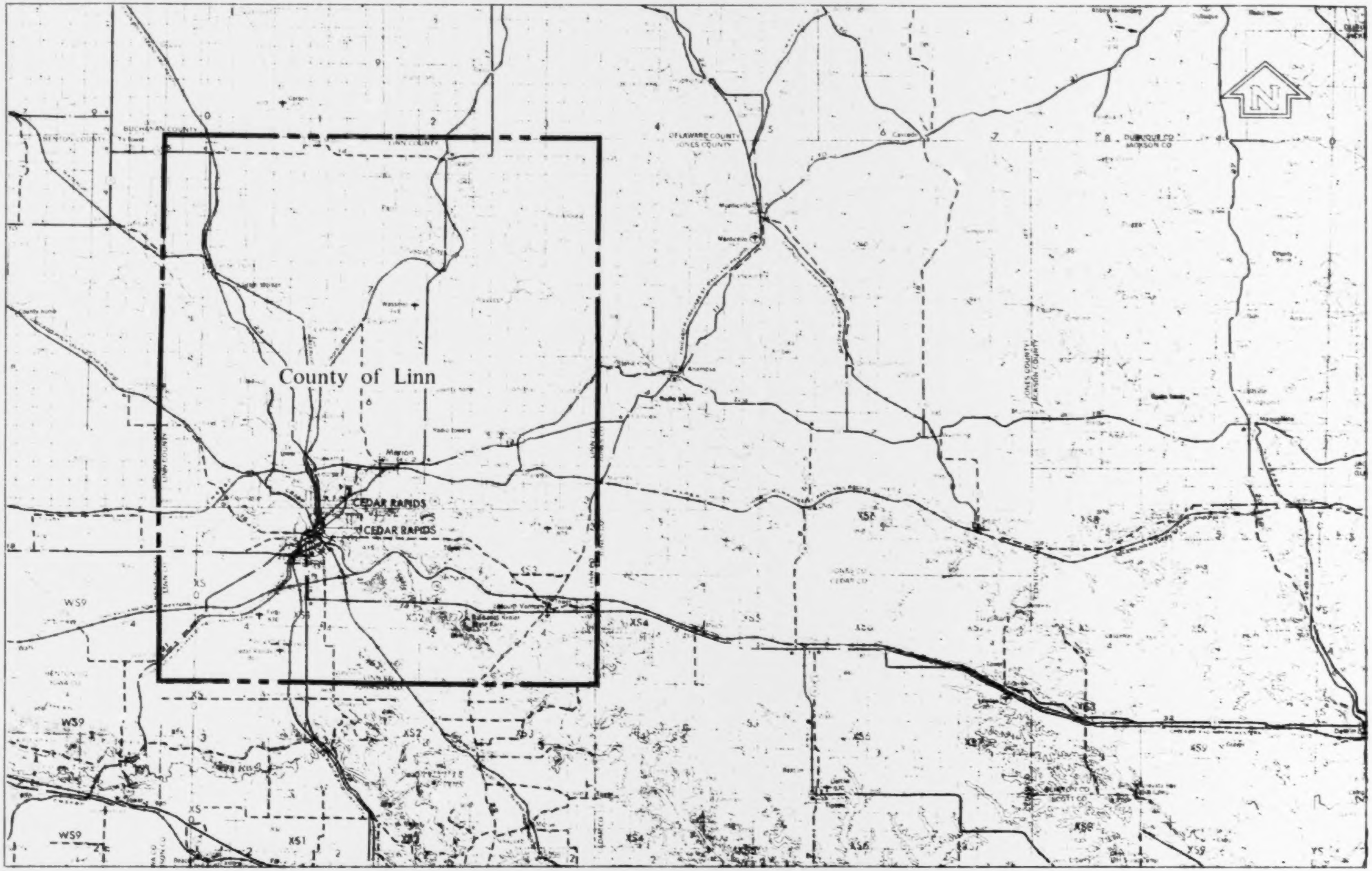
County of Linn
CEDAR RAPIDS
Marion
DELAWARE COUNTY
JONES COUNTY
BENTON COUNTY
N

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

APPROXIMATE SCALE

8 0 8 16 24 MILES

VICINITY MAP

h. East Indian Creek, from mouth at Indian Creek to about 2.5 miles upstream of State Highway 13, approximately 4.5 miles;

i. Dry Creek, from the north corporate limits of the City of Hiawatha to the south corporate limits of the City of Robins, and from north corporate limits of Robins to south corporate limits of Alburnett, a total approximate distance of 11.6 miles;

j. Buffalo Creek, from the east county boundary to the east corporate limits of the City of Coggon, and from the west corporate limits of Coggon to the north county boundary, approximately 18.2 miles;

k. Otter Creek, from mouth at the Cedar River to confluence with East Otter Creek, approximately 5.6 miles;

l. West Otter Creek, from confluence with Otter Creek to about 5.1 miles upstream of County Road E16, approximately 14.4 miles;

m. East Otter Creek, from confluence with Otter Creek to about 1.3 miles upstream of County Road; just downstream of half section line of Section 11, T85N, R7W; a total distance of about 11.1 miles;

n. Prairie Creek, from Edgewood Road to west county boundary, approximately 7.4 miles;

o. Morgan Creek, from the mouth at the Cedar River to the west county boundary, approximately 7.3 miles;

p. Squaw Creek, from mouth at Indian Creek to County Road E45, approximately 6.1 miles;

q. Hoosier Creek, from the south county boundary to about 2.8 miles upstream County Road E70, approximately 6.4 miles;

r. South Hoosier Creek, from mouth at Hoosier Creek to about 1.6 miles upstream County Road W54, approximately 4.9 miles;

s. Simmons Creek, from mouth at Big Creek to Chicago, Milwaukee, St. Paul and Pacific Railroad, approximately 3.0 miles; and

t. Tissel Hollow, from the mouth at Prairie Creek to about 2,900 feet upstream of County Road E66, approximately 1.6 miles.

2.2 Community Description

Linn County is located in east-central Iowa, and is bordered by Buchanan County and Delaware County on the north, Benton County on the west, Johnson County on the south and Jones County and Cedar County on the east. It is essentially an agricultural region containing its principal city Cedar Rapids, the second largest city in the state. Other incorporated communities located in Linn County are Marion, Hiawatha, Robins, Palo, Fairfax, Center Point, Central City, Mount Vernon, Lisbon, Walker, Alburnett, Ely, Coggon, Springville, Prairieburg and Bertram. The county has an area of 458,752 acres and a population which exceeds 150,000 according to the 1970 Census (Reference 1).

The climate of Linn County is typically continental. It is characterized by frequent and often rapid changes in weather throughout the year. Approximately 75 per cent of the annual precipitation averaging 33.4 inches, falls during the period from April to September. Most of the heavy showers are in spring and early summer. The temperatures of the county vary widely. The minimum and maximum temperatures ever recorded were as low as -36 degrees Fahrenheit (F.) in January 1883, and as high as 110 degrees F. in July 1911 (Reference 2).

The topography of the county is characterized by a generally subdued land surface. The greatest relief occurs in areas adjacent to the Cedar and Wapsipinicon Rivers. Typical upland features are the generally flat horizon, low relief and gently rolling surface. Relief along the rivers is generally rough and hilly; however, in some areas adjacent land is flat for several miles.

As diverse as the topography is for Linn County so are the types of soils that exist. On uncultivated land, the soil in this area supports a variety of native grasses and trees while on cultivated land the main crops are corn and soybeans. The two major types of soils are the Fayette-Down-Chelsea Association and the Loamy Alluvia-Sparta-Spillville Association. These soils range from moderately well drained to poorly drained (Reference 2).

Development within the flood plains of the streams in Linn County is essentially centered around Cedar Rapids and the surrounding communities. In these areas, the development consists of industrial, commercial and residential areas, with some park lands. Streams in other parts of the county currently have little or no development except for scattered park lands.

2.3 Principal Flood Problems

The low lying areas of Linn County are subject to periodic flooding from the streams within the county. Most flooding occurs in early spring from heavy rains and melting snow, but heavy rains can cause flooding at any time of the year. Major flooding has occurred in March 1929, February 1937, June 1947, January 1960, March 1961, and April 1965. The magnitude of these past floods is unavailable.

2.4 Flood Protection Measures

Some small flood protection measures have been constructed on some of the streams studied in detail, the measures constructed consist mainly of small flood control and grade control dams and some piecemeal construction of levees. These structures provide little or no flood protection. At the present time, no major flood protection structures are in operation on the streams studied in detail.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equalled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance premium rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 per cent chance, respectively, of being equalled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (one per cent chance of annual occurrence) in any 50-year period is about 40 per cent (four in ten), and for any 90-year period, the risk increases to about 60 per cent (six in ten). The analyses reported here reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for floods of the selected recurrence intervals for each flooding source studied in detail affecting the community.

The frequency-discharge information for all streams studied in detail except the Cedar River, Wapsipinicon River, Martins Creek and Tissel Hollow come from the Iowa Natural Resources Council Bulletin No. 11, Model 2 in Region 1 (Reference 3). This method utilizes such factors as drainage area, ground slope and a gaging station coefficient.

Martins Creek and Tissel Hollows' discharges were determined by the U.S. Soil Conservation Service (SCS) ES-1027 (Reference 4). The SCS ES-1027 considers parameters such as drainage area, slope and ground cover.

On the Cedar River, the frequency-discharge information was obtained from Figure 4 of the Iowa Natural Resources Council Bulletin No. 11 (Reference 3). This figure shows a discharge-frequency curve for the Cedar River. The discharges obtained from Figure 4 compared closely with those obtained from a log-Pearson Type III analysis of gaging station records of a U.S. Geological Survey (USGS) gage located in Cedar Rapids (No. 05-4645, with 73 years of record) as outlined in Water Resources Council Bulletin No. 17A (Reference 5).

On the Wapsipinicon River, the frequency-discharge information was developed by analyzing the gaging station records of two gaging stations, one located upstream in Independence, Iowa and one located downstream in Dewitt. The gaging station data were analyzed using a log Pearson Type III analysis outlined in the Water Resources Council Bulletin No. 17A, and then interpolating between these two gaging stations to obtain the flows for Linn County.

A decrease in discharges occurs on the Cedar River. This decrease can be attributed to spill over from the Cedar River flood plain to the flood plains of the many smaller streams adjacent to the Cedar River. Attenuation caused by heavy vegetation in the low lying overbank surrounding the Cedar River areas also contributes to this decrease.

Discharges for Indian Creek, downstream of the City of Cedar Rapids were obtained from the City of Cedar Rapids, Iowa Flood Insurance Study (Reference 6).

Peak discharges for the 10-, 50-, 100-, and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of the streams in the community were carried out to provide estimates of the elevations of the floods of the selected recurrence intervals along each flooding source studied in detail.

Cross section data were obtained from aerial photography which was obtained in April and May 1979. All bridges and culverts were surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles. For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map.

Roughness coefficients (Manning's "n"), for the detailed study streams, were estimated by field inspection. They range from 0.030 in channel sections to 0.15 in overbank areas.

The starting water-surface elevations for the Cedar River and Prairie Creek were taken from existing U.S. Army Corps of Engineers (COE) Flood Plain Information reports (References 7 and 8). Big Creek, Morgan Creek, Wapsipinicon River, Otter Creek and Buffalo Creek starting elevations were taken from USGS Open-File Reports (References 9-12). These reports utilized known data from high water marks and existing gaging stations to develop their starting elevations and calibrate their computer models.

The starting water-surface elevation for Dry Creek was taken from the preparation of work for the City of Cedar Rapids Flood Insurance Study (Reference 6). Normal depth calculations were used to determine the starting elevations for the remainder of the streams.

Water-surface profiles were developed using a HEC-2 computer step-backwater model (Reference 13).

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
CEDAR RIVER					
At south county boundary	6,997	53,800	78,000	88,000	113,000
At State Highway 1 bridge	6,974	53,500	77,900	87,900	112,900
Just upstream of confluence of Big Creek	6,844	53,200	77,700	87,700	112,700
Just upstream of confluence of Morgan Creek	6,458	53,500	78,100	88,100	113,100
Just upstream of confluence of Otter Creek	6,381	53,700	78,400	88,400	113,400
Just upstream of confluence of Opossum Creek	6,243	53,800	78,500	88,600	113,600
WAPSIPINICON RIVER					
At south county boundary	1,324	18,350	30,520	36,000	49,220
Just above confluence of Heatons Creek	1,294	18,090	30,080	35,480	48,500
Just above confluence of Waltons Creek	1,242	17,810	29,620	34,940	47,760
MARTINS CREEK					
At mouth	4.2	1,255	2,485	3,152	4,995
Just upstream of small tributary in the northwest quarter of Section 14, T83N, R6W	3.5	1,225	2,410	3,055	4,830
Just upstream of small tributary in the northwest quarter of Section 11, T83N, R6W	2.2	1,010	2,010	2,565	4,105

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
BIG CREEK					
At mouth	111	6,750	11,415	13,595	18,720
Just upstream of confluence of Abbe Creek	81.6	5,845	10,010	11,980	16,675
Just upstream of confluence of Martins Creek	68.3	5,605	9,585	11,470	15,970
Just upstream of confluence of Elbow Creek	51.1	4,840	8,390	10,100	14,230
Just upstream of confluence of Simmons Creek	41.7	4,425	7,725	9,320	13,220
Just upstream of confluence of Crabapple Creek	25.4	3,330	5,990	7,315	10,645
BLUE CREEK					
At mouth	63.0	5,330	9,170	10,995	15,385
EAST BLUE CREEK					
At mouth	27.7	3,240	5,875	7,200	10,555
Just upstream of confluence of Apple Creek	18.5	2,655	4,905	6,055	9,020
Just upstream of tributary located in southeast quarter of Section 28, T86N, R8W	13.9	2,215	4,170	5,190	7,870
Just upstream of tributary located in southeast quarter of Section 16, T86N, R6W	8.0	1,750	3,355	4,205	6,485
INDIAN CREEK					
At mouth	93	5,880	10,080	12,130	17,530
Just upstream of confluence of Squaw Creek	78	5,400	9,330	11,270	16,370
At south corporate limits of Cedar Rapids	72	5,200	9,010	10,900	15,870

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
INDIAN CREEK (Cont'd)					
At County Road crossing in the northeast quarter of Section 30, T84N, R6W	32.6	3,520	6,320	7,740	11,550
Just upstream of confluence of Berry's Run	26.1	3,190	5,780	7,110	10,670
Just upstream of a tributary in the northeast quarter of Section 20, T84N, R6W	24.4	3,090	5,615	6,910	10,390
On County Road located on the north line of Section 17, T84N, R6W	19.8	2,795	5,125	6,325	9,575
Just upstream of the north line of Section 8, T84N, R6W	15.9	2,515	4,660	5,770	8,790
Just upstream of confluence of East Indian Creek	7.6	1,765	3,370	4,225	6,585
Just upstream of a tributary located in the northwest quarter of Section 2, T85N, R6W	5.3	1,485	2,800	3,630	5,720
Just upstream of a tributary located in the southwest quarter of Section 20, T85N, R6W	2.0	930	1,880	2,410	3,905
EAST INDIAN CREEK					
At mouth	8.3	1,875	3,560	4,440	6,780
At County Road in center of Section 34, T85N, R6W	2.7	1,110	2,180	2,770	4,415

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS)			
		10-YEAR	50-YEAR	100-YEAR	500-YEAR
DRY CREEK					
At east corporate limits of Hiawatha	24.1	3,075	5,585	6,875	10,340
At County Road on west line of Section 22, T84N, R7W	19.7	2,790	5,115	6,315	9,560
Just downstream of County Road on west line of Section 14, T84N, R7W	16.6	2,569	4,745	5,874	8,939
BUFFALO CREEK					
At east county boundary	203	8,545	14,170	16,855	23,795
In northeast quarter of Section 4, T85N, R5W	188	8,235	13,705	16,320	23,090
Just above south section line of Section 19, T86N, R5W	171	7,870	13,145	15,680	22,250
In northwest quarter of Section 11, T86N, R6W	151	7,415	12,450	14,880	21,195
Just above unnamed tributary in northeast quarter of Section 4, T86N, R6W	142	7,200	12,120	14,500	20,690
OTTER CREEK					
At mouth	70.9	5,080	8,865	10,690	15,130
At County Road in south half of Section 24, T84N, R8W	65.1	4,880	8,545	10,325	14,655
Just downstream of County Road in northwest quarter of Section 7, T84N, R7W	57.1	4,565	8,040	9,735	13,900

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
WEST OTTER CREEK					
At mouth	31.7	2,855	5,335	6,610	9,930
At County Road in southeast quarter of Section 24, T85N, R8W	26.7	2,420	4,625	5,785	8,860
At County Road in center of Section 7, T85N, R7W	19.1	1,930	3,780	4,780	7,490
At north line of Section 31, T86N, R7W	10.3	1,570	3,105	3,940	6,230
EAST OTTER CREEK					
At mouth	25.4	2,765	5,145	6,370	9,535
At County Road in northwest quarter of Section 28, T85N, R7W	16.0	1,945	3,775	4,755	7,395
At north line of Section 15, T85N, R7W	9.4	1,460	2,910	3,710	5,910
PRAIRIE CREEK					
At County Road located on east line of Section 12, T82N, R8W	197.5	8,400	13,960	16,610	23,470
Just upstream of confluence of Tissel Hollow	187.7	8,230	13,695	16,310	23,075
Just upstream of Chicago and North Western Railroad	181.0	8,085	13,480	16,060	22,750
Just upstream of small tributary in southwest quarter of Section 8, T82N, R8W	173.5	7,925	13,230	15,775	22,375

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
MORGAN CREEK					
At mouth	18.9	2,625	4,865	6,010	8,975
At first County Road upstream of State Highway 94	16.8	2,490	4,630	5,730	8,595
At County Road located on north section line of Section 28, T83N, R8W	13.1	2,185	4,115	5,120	7,765
At County Road located on west line of Section 28, T83N, R8W	10.5	1,970	3,740	4,670	7,140
At first County Road located upstream of U.S. Highway 218	8.6	1,825	3,490	4,365	6,695
SQUAW CREEK					
At mouth	14.6	2,415	4,485	5,565	8,500
Just upstream of tributary in the southeast quarter of Section 20, T83N, R6W	11.0	2,110	3,965	4,940	7,610
At County Road in southeast quarter of Section 8, T83N, R6W	8.9	1,905	3,615	4,520	7,005
At County Road on south line of Section 4, T84N, R6W	6.7	1,610	3,120	3,920	6,070
HOOSIER CREEK					
At south county boundary	23.3	2,820	5,205	6,425	9,565
At the northwest corporate limits of Ely	17.1	2,380	4,470	5,555	8,390
Just upstream of confluence of South Hoosier Creek	5.4	1,360	2,685	3,405	5,375
At east section line of Section 22, T82N, R7W	3.5	1,035	2,105	2,700	4,375

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA SQ MILES	PEAK DISCHARGES (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
SOUTH HOOSIER CREEK					
At mouth	9.2	1,655	3,230	4,075	6,360
At west section line of Section 26, T82N, R7W	6.1	1,410	2,775	3,515	5,550
1,000 feet upstream of County Road W54	4.3	1,180	2,365	3,015	4,830
SIMMONS CREEK					
At mouth	7.1	1,765	3,365	4,200	6,440
Just upstream of small tributary located about 1,000 feet upstream of mouth	6.6	1,696	3,240	4,055	6,240
Just upstream of small tributary located in the northwest quarter of Section 8, T83N, R5W	5.8	1,535	2,965	3,730	5,805
At center of Section 5, T83N, R5W	4.9	1,410	2,745	3,465	5,425
TISSEL HOLLOW					
At mouth	2.7	1,300	2,000	2,500	3,500
Just upstream of small tributary located in center of Section 14, T82N, R8W	2.2	1,175	1,750	2,200	2,950
At County Road located on north line of Section 23, T82N, R8W	1.9	1,000	1,450	1,800	2,550

Flood profiles and hydraulic data for Indian Creek below Cedar Rapids and portions of the Cedar River above and below Cedar Rapids were taken from the preparation of work for the City of Cedar Rapids Flood Insurance Study (Reference 6). Also, flood profiles for a portion of Indian Creek near the north corporate limits of Marion, and a segment of Squaw Creek south of Marion and north of County Road E45, were taken from the City of Marion Flood Insurance Study (Reference 14).

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals.

The hydraulic analyses for this study are based only on the effects of unobstructed flow. The flood elevations as shown on the profiles are, therefore, considered valid only if hydraulic structures, in general, remain unobstructed and if channel and overbank conditions remain essentially the same as ascertained during this study.

All elevations are referenced from National Geodetic Vertical Datum of 1929 (NGVD); elevation reference marks used in the study are shown on the maps.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study includes a flood boundary map designed to assist communities in developing sound flood plain management measures.

4.1 Flood Boundaries

In order to provide a national standard without regional discrimination, the 100-year flood has been adopted by FEMA as the base flood for purposes of flood plain management measures. The 500-year flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the boundaries of the 100-year and the 500-year floods have been delineated using the elevations determined at each cross section; between cross sections the boundaries were interpolated using photogrammetric methods on aerial photographs enlarged to a scale of 1:12000, (Reference 15). The 100-year boundaries for all approximate flooding areas were taken from the Flood Hazard Boundary Map for Linn County (Reference 16).

The boundaries of the 100- and 500-year floods are shown on the Flood Boundary and Floodway Map. Small areas within the flood boundaries may lie above the flood elevations and, therefore, not be subject to flooding; owing to lack of detailed topographical information or to limitations of the map scale, such areas are not shown. In cases where the 100-year and the 500-year flood boundaries are close together, only the 100-year boundary has been shown.

4.2 Floodways

Encroachment on flood plains, such as artificial fill, reduces the flood-carrying capacity, increases the flood heights of streams, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, the concept of a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100-year flood may be carried without substantial increases in flood heights. Minimum standards of FEMA limit such increases in flood heights to 1.0 foot, provided that hazardous velocities are not produced.

The recommended floodway was computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations were tabulated at selected cross sections for each stream segment for which a floodway was computed (Table 2). The floodway upstream of the Chicago, Milwaukee, St. Paul and Pacific Railroad on Martins Creek is not shown because the floodway concept is not applicable in ponding areas.

As shown on the Flood Boundary and Floodway Map, the floodway widths were determined at cross sections; between cross sections, the boundaries were interpolated. In cases where the boundaries of the floodway and the 100-year flood are either close together or collinear, only the floodway boundary has been shown.

The area between the floodway and the boundary of the 100-year flood is termed the floodway fringe. The floodway fringe thus encompasses the portion of the flood plain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.

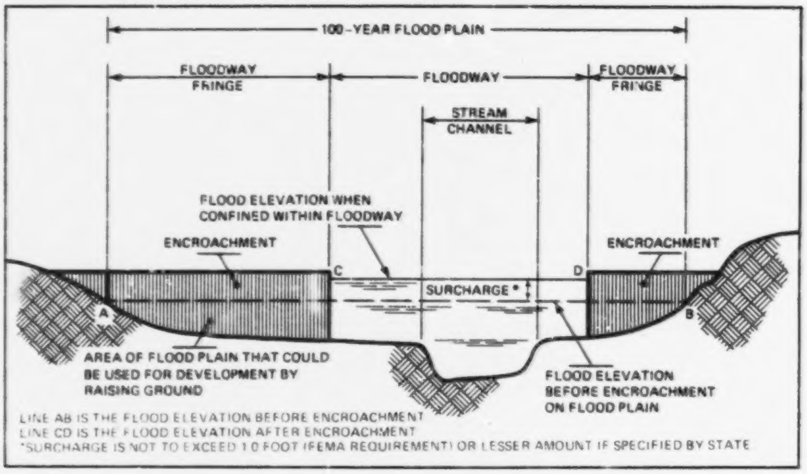
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE *
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FIGURE 2 - Floodway Schematic

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
CEDAR RIVER								
A	7615	3131	38,068	2.3	693.9	693.9	694.9	1.0
B	10,715	1788	30,287	2.9	694.2	694.2	695.1	0.9
C	17,415	2059	34,195	2.6	694.7	694.7	695.6	0.9
D	17,940	3650	46,564	1.9	695.0	695.0	695.9	0.9
E	22,590	1956	25,104	3.5	695.5	695.5	696.4	0.9
F	27,140	1617	23,995	3.7	696.5	696.5	697.4	0.9
G	28,510	986	17,548	5.0	696.8	696.8	697.8	1.0
H	31,130	1365	18,798	4.7	697.6	697.6	698.5	0.9
I	35,130	627	16,376	5.4	698.5	698.5	699.2	0.7
J	39,980	554	13,771	6.4	699.4	699.4	700.1	0.7
K	42,720	882	20,451	4.3	700.4	700.4	701.1	0.7
L	47,720	577	13,663	6.4	701.5	701.5	702.1	0.6
M	52,505	2300	28,164	3.1	702.5	702.5	703.1	0.6
N	56,505	897	15,450	5.7	702.7	702.7	703.2	0.5
O	59,755	727	13,168	6.7	703.4	703.4	704.0	0.6
P	62,355	1175	15,887	5.5	704.5	704.5	705.2	0.7
Q	63,775	1090	16,102	5.5	705.1	705.1	706.1	1.0
R	64,845	1915	27,494	3.2	706.6	706.6	707.3	0.7
S	68,345	2009	18,929	4.6	707.6	707.6	708.4	0.8
T	72,220	1581	22,126	4.0	708.8	708.8	709.8	1.0
U	79,165	1615/1085[2]	24,632	3.5	711.0	711.0	711.8	0.8
V	87,225	870/645[2]	17,139	5.1	713.9	713.9	714.7	0.8
W	90,195	560/450[2]	12,954	6.7	714.8	714.8	715.6	0.8
X	138,575	1070/620[2]	18,558	4.7	732.2	732.2	733.0	0.8
Y	141,775	1800/480[2]	28,652	3.0	733.2	733.2	734.0	0.8
Z	147,215	2450/775[2]	39,251	2.2	734.5	734.5	735.3	0.8

[1] FEET ABOVE CONFLUENCE OF CLEAR CREEK

[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

CEDAR RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
CEDAR RIVER								
AA	149,165	2500/1210[2]	36,379	2.4	734.9	734.9	735.7	0.8
AB	151,085	1200	19,726	4.4	735.2	735.2	736.0	0.8
AC	151,765	1533	24,336	3.6	736.0	736.0	737.0	1.0
AD	155,150	2445	33,391	2.6	736.6	736.6	737.6	1.0
AE	156,920	758	12,905	6.8	736.9	736.9	737.9	1.0
AF	157,535	875	16,486	5.3	737.6	737.6	738.5	0.9
AG	159,200	1730	29,252	3.0	738.3	738.3	739.1	0.8
AH	162,890	2577	35,671	2.5	738.9	738.9	739.7	0.8
AI	168,425	6660	82,102	1.1	739.6	739.6	740.5	0.9
AJ	173,860	6724	60,423	1.5	740.2	740.2	741.1	0.9
AK	176,210	6724	76,320	1.2	740.7	740.7	741.7	1.0
AL	178,540	5850	62,635	1.4	741.4	741.4	742.3	0.9
AM	184,025	6330	59,006	1.5	742.4	742.4	743.3	0.9
AN	189,405	4740	48,018	1.8	743.3	743.3	744.2	0.9
AO	193,965	1484	19,356	4.6	744.6	744.6	745.5	0.9
AP	198,680	1919	28,524	3.1	746.7	746.7	747.6	0.9
AQ	202,060	1908	25,381	3.5	747.3	747.3	748.1	0.8
AR	213,760	4838	33,375	2.7	751.3	751.3	752.1	0.8
AS	219,810	5463	49,163	1.8	754.0	754.0	754.9	0.9
AT	226,215	4555	45,007	2.0	755.6	755.6	756.6	1.0
AU	227,770	1551	15,337	5.8	756.2	756.2	757.2	1.0
AV	229,690	3562	40,520	2.2	757.5	757.5	758.3	0.8
AW	234,765	4400	47,752	1.9	758.6	758.6	759.6	1.0

[1] FEET ABOVE CONFLUENCE OF CLEAR CREEK

[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

CEDAR RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
WAPSIPINICON RIVER								
A	2100	300	7656	4.7	805.3	805.3	806.2	0.9
B	4850	284	6959	5.2	805.9	805.9	806.9	1.0
C	6770	504	11,365	3.2	806.6	806.6	807.6	1.0
D	8350	567	12,435	2.9	807.0	807.0	808.0	1.0
E	8595	818	19,851	1.8	807.2	807.2	808.2	1.0
F	11,765	1130	24,583	1.5	807.4	807.4	808.4	1.0
G	15,445	1217	27,694	1.3	807.7	807.7	808.7	1.0
H	18,225	1708	33,631	1.1	807.9	807.9	808.9	1.0
I	22,305	3934	57,297	0.6	808.0	808.0	809.0	1.0
J	25,025	4452	63,995	0.6	808.1	808.1	809.1	1.0
K	28,225	3899	52,803	0.7	808.2	808.2	809.2	1.0
L	31,845	2413	26,823	1.3	808.3	808.3	809.3	1.0
M	36,305	1245	11,098	3.2	809.2	809.2	810.1	0.9
N	38,935	273	4253	8.5	810.9	810.9	811.7	0.8
O	44,465	280	5249	6.9	816.3	816.3	817.3	1.0
P	46,645	528	9116	3.9	817.7	817.7	818.7	1.0
Q	48,865	275	5240	6.9	818.4	818.4	819.4	1.0
R	49,315	438	7628	4.7	819.0	819.0	819.7	0.7
S	52,275	337	5569	6.5	820.3	820.3	821.0	0.7
T	55,475	232	4957	7.3	822.6	822.6	823.4	0.8
U	58,465	426	9602	3.7	824.3	824.3	825.2	0.9
V	61,215	807	18,687	1.9	825.0	825.0	825.9	0.9
W	64,025	1006	19,925	1.8	825.3	825.3	826.2	0.9
X	66,885	2067	37,795	1.0	825.5	825.5	826.4	0.9
Y	69,335	1620	20,336	1.7	825.6	825.6	826.5	0.9
Z	70,865	1137	9709	3.7	825.8	825.8	826.7	0.9

[1] FEET ABOVE COUNTY BOUNDARY

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

WAPSIPINICON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
WAPSIPINICON RIVER								
AA	71,980	979	16,845	2.1	826.3	826.3	827.1	0.8
AB	74,420	1734	25,169	1.4	826.6	826.6	827.4	0.8
AC	77,840	3236	40,105	0.9	826.8	826.8	827.6	0.8
AD	80,850	1622	17,662	2.0	827.0	827.0	827.8	0.8
AE	82,460	1135	12,856	2.8	827.2	827.2	828.0	0.8
AF	87,585	495	7396	4.8	836.3	836.3	836.4	0.1
AG	88,915	1122	15,510	2.3	836.9	836.9	837.0	0.1
AH	92,205	397	6411	5.5	837.3	837.3	837.5	0.2
AI	94,885	514	7893	4.5	838.3	838.3	838.8	0.5
AJ	98,195	473	8271	4.3	839.4	839.4	840.2	0.8
AK	101,515	738	12,822	2.8	840.0	840.0	840.9	0.9
AL	104,235	1846	16,213	2.2	840.5	840.5	841.4	0.9
AM	107,010	2667	43,103	0.8	840.8	840.8	841.7	0.9
AN	109,760	3278	42,478	0.8	841.0	841.0	841.9	0.9
AO	111,980	1830	21,100	1.7	841.2	841.2	842.1	0.9
AP	112,740	1667	17,287	2.0	841.3	841.3	842.2	0.9
AQ	116,500	1033	9051	3.9	842.6	842.6	843.5	0.9
AR	119,200	696	7568	4.6	844.6	844.6	845.4	0.8
AS	122,810	470	6302	5.5	847.1	847.1	848.0	0.9
AT	128,120	843	10,097	3.5	849.7	849.7	850.6	0.9
AU	132,000	642	7757	4.5	851.0	851.0	851.9	0.9
AV	134,410	319	6491	5.4	851.8	851.8	852.7	0.9
AW	137,760	486	9084	3.8	853.4	853.4	854.3	0.9
AX	140,160	1236	18,950	1.8	854.2	854.2	855.1	0.9
AY	144,050	614	11,869	2.9	854.7	854.7	855.6	0.9
AZ	148,360	2381	37,826	0.9	855.2	855.2	856.1	0.9

[1] FEET ABOVE COUNTY BOUNDARY

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

WAPSIPINICON RIVER

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
WAPSIPINICON RIVER								
BA	150,370	2129	31,514	1.1	855.3	855.3	856.2	0.9
BB	156,290	460	6966	5.0	855.7	855.7	856.5	0.8
BC	157,145	392	5058	6.9	856.0	856.0	857.0	1.0
BD	158,045	1298	14,101	2.5	857.6	857.6	858.3	0.7
BE	160,975	1782	19,047	1.8	858.1	858.1	858.9	0.8
BF	165,765	1542	15,329	2.3	859.0	859.0	859.8	0.8
BG	167,685	937	10,744	3.3	859.5	859.5	860.3	0.8
MARTINS CREEK								
A	915[2]	753[3]	4683	2.4	737.6	737.6	738.2	0.6
B	3100[2]	110	566	5.6	746.2	746.2	746.9	0.7
C	4440[2]	229	1422	2.2	749.4	749.4	750.2	0.8
D	7010[2]	177	852	3.6	754.2	754.2	754.9	0.7
E	8805[2]	35	266	11.5	759.4	759.4	760.3	0.9
F	9720[2]	92	690	4.4	764.7	764.7	765.3	0.6
G	10,150[2]	31	284	10.7	768.1	768.1	768.1	0.0
H	11,690[2]	100	523	5.8	772.4	772.4	772.4	0.0
I	13,280[2]	159	529	5.8	779.1	779.1	779.4	0.3
J	14,580[2]	280	679	2.3	782.9	782.9	783.8	0.9
K	15,515[2]	25	196	8.1	786.4	786.4	787.4	1.0
L	15,935[2]	102	397	4.0	788.7	788.7	789.2	0.5
M	16,340[2]	8	53	15.0	790.7	790.7	790.7	0.0

[1] FEET ABOVE COUNTY BOUNDARY

[2] FEET ABOVE MOUTH

[3] COMBINED FLOODWAY WIDTH OF BIG CREEK AND MARTINS CREEK

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

WAPSIPINICON RIVER - MARTINS CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
BIG CREEK								
A	4970	507	3784	3.6	707.8	706.1[4]	707.1	1.0
B	5835	162	1608	8.5	707.9	707.9	708.9	1.0
C	6430	466	3765	3.6	709.8	709.8	710.3	0.5
D	7078	378	2745	4.9	710.2	710.2	710.7	0.5
E	7585	802/700[2]	6269	2.2	710.8	710.8	711.6	0.8
F	9609	944	7215	1.9	711.3	711.3	712.2	0.9
G	15,507	622/300[2]	4725	2.5	718.6	718.6	719.4	0.8
H	18,017	245	2353	5.1	721.2	721.2	721.9	0.7
I	20,452	243	2541	4.7	723.2	723.2	724.1	0.9
J	22,672	311	2709	4.4	724.9	724.9	725.7	0.8
K	25,242	331	3668	3.3	727.7	727.7	728.7	1.0
L	25,712	152	2077	5.8	727.9	727.9	728.9	1.0
M	25,997	750	5405	2.2	728.6	728.6	729.4	0.8
N	29,312	867	5006	2.4	730.7	730.7	731.6	0.9
O	30,587	161	1096	10.9	731.5	731.5	732.3	0.8
P	31,017	152	1827	6.6	735.3	735.3	735.8	0.5
Q	31,292	743	6048	2.0	736.3	736.3	736.7	0.4
R	32,942	825	5488	2.1	736.8	736.8	737.2	0.4
S	35,337	753[3]	4683	2.4	737.6	737.6	738.2	0.6
T	36,712	738	3243	3.5	738.4	738.4	739.0	0.6
U	37,527	714	2763	4.2	739.3	739.3	740.0	0.7
V	37,997	114	1058	10.8	740.7	740.7	741.5	0.8
W	38,312	175	1547	7.4	743.2	743.2	743.2	0.0
X	40,422	260	2304	5.0	746.1	746.1	746.8	0.7
Y	42,717	322	2901	4.0	748.0	748.0	748.8	0.8
Z	44,072	267	2406	4.8	750.9	750.9	751.5	0.6

[1] FEET ABOVE MOUTH

[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS

[3] COMBINED FLOODWAY WIDTH OF BIG CREEK AND MARTINS CREEK

[4] ELEVATIONS WITHOUT CONSIDERING OVERFLOW EFFECT FROM CEDAR RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
BIG CREEK								
AA	45,762	96	1178	8.6	752.4	752.4	753.3	0.9
AB	47,882	145	1599	6.3	755.5	755.5	756.5	1.0
AC	49,512	257	1846	5.5	757.8	757.8	758.8	1.0
AD	50,887	411	2718	3.7	759.8	759.8	760.8	1.0
AE	51,602	438[2]	3299	2.8	760.7	760.7	761.7	1.0
AF	52,927	159	1354	6.9	761.8	761.8	762.7	0.9
AG	53,472	101	992	9.4	762.9	762.9	763.8	0.9
AH	54,332	556	4217	2.2	765.9	765.9	766.2	0.3
AI	55,982	419	2852	3.3	766.6	766.6	767.0	0.4
AJ	58,737	77	751	12.4	769.8	769.8	770.7	0.9
AK	60,142	113	1150	6.4	775.1	775.1	775.7	0.6
AL	62,742	383	2059	3.6	778.3	778.3	779.1	0.8
AM	64,762	61	745	9.8	780.2	780.2	780.9	0.7
AN	66,922	81	960	7.6	784.1	784.1	784.8	0.7

[1] FEET ABOVE MOUTH

[2] COMBINED FLOODWAY WIDTH OF BIG CREEK AND SIMMONS CREEK

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

BIG CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
BLUE CREEK								
A	3650	700	3345	3.3	758.9	758.2[2]	759.0	0.8
B	4930	616	2474	4.4	762.1	762.1	762.9	0.8
C	5965	855	4949	2.2	764.2	764.2	765.2	1.0
EAST BLUE CREEK								
D	9065	537	2742	4.0	768.4	768.4	769.2	0.8
E	10,565	417	2496	2.9	771.9	771.9	772.8	0.9
F	11,210	403	1232	5.8	772.7	772.7	773.6	0.9
G	11,780	528	3807	1.9	774.2	774.2	774.7	0.5
H	14,040	303	1667	3.6	775.6	775.6	776.4	0.8
I	14,670	120	895	6.8	776.6	776.6	777.4	0.8
J	15,200	140	1189	5.1	778.2	778.2	779.1	0.9
K	15,830	442	2966	2.0	779.1	779.1	779.8	0.7
L	18,090	83	582	10.4	781.0	781.0	782.0	1.0
M	18,465	117	706	8.6	784.0	784.0	784.9	0.9
N	19,485	354	2195	2.8	786.9	786.9	787.3	0.4
O	21,440	88	776	7.8	788.3	788.3	789.2	0.9
P	21,920	178	1209	5.0	790.3	790.3	791.2	0.9
Q	24,265	209	1099	5.5	794.1	794.1	795.1	1.0
R	25,970	252	1528	4.0	797.8	797.8	798.8	1.0
S	26,968	93	936	6.5	799.7	799.7	800.6	0.9
T	27,446	511	3106	1.9	800.9	800.9	801.6	0.7
U	28,556	1000	3148	1.9	801.4	801.4	802.0	0.6
V	29,265	438	1641	3.7	802.2	802.2	803.0	0.8
W	30,280	490	1689	3.6	803.6	803.6	804.4	0.8
X	32,035	157	985	5.3	807.2	807.2	807.2	0.0
Y	34,227	92	720	7.2	810.6	810.6	811.5	0.9
Z	34,777	103	734	7.1	812.4	812.4	813.4	1.0

[1] FEET ABOVE MOUTH

[2] ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM CEDAR RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

BLUE CREEK-EAST BLUE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
EAST BLUE CREEK								
AA	35,267	93	667	7.8	814.2	814.2	814.6	0.4
AB	37,142	296	1669	3.1	816.8	816.8	817.5	0.7
AC	39,977	358	1294	4.0	822.0	822.0	822.6	0.6
AD	41,252	94	584	8.9	822.9	822.9	823.9	1.0
AE	41,987	209	1018	5.1	826.9	826.9	827.0	0.1
AF	42,742	224	683	7.6	831.8	831.8	831.8	0.0
AG	43,527	467	2737	1.9	833.6	833.6	834.5	0.9
AH	44,437	86	777	6.7	834.8	834.8	835.7	0.9
AI	44,547	164	1185	4.4	835.6	835.6	836.0	0.4
AJ	44,802	108	811	6.4	835.9	835.9	836.5	0.6
AK	45,982	218	1293	4.0	838.1	838.1	838.6	0.5
AL	47,277	79	487	8.6	839.9	839.9	840.9	1.0
AM	48,859	193	961	4.4	843.7	843.7	844.1	0.4
AN	50,124	79	619	6.8	846.7	846.7	847.7	1.0
AO	51,368	176	1303	3.2	848.9	848.9	849.5	0.6
AP	52,133	135	993	4.2	849.4	849.4	850.0	0.6

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

EAST BLUE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
INDIAN CREEK								
A	1710	500	4072	3.0	711.9	706.3[3]	707.2	0.9
B	4370	400	3059	3.7	711.9	709.5[3]	710.3	0.8
C	6010	235	1667	6.8	712.0	712.0	712.8	0.8
D	9430	315	3397	3.3	715.7	715.7	716.5	0.8
E	10,990	300	2783	4.0	716.9	716.9	717.8	0.9
F	13,225	120	1250	8.7	720.0	720.0	721.0	1.0
G	14,445	350	2588	4.2	723.7	723.7	724.5	0.8
H	17,280	400	4029	2.7	725.9	725.9	726.6	0.7
I	22,250	300	2028	5.4	732.1	732.1	732.7	0.6
J	27,060	250/190[2]	2109	5.2	741.1	741.1	741.8	0.7
K	70,800	400	1907	4.3	793.1	793.1	793.8	0.7
L	73,760	345	1093	7.1	798.7	798.7	798.7	0.0
M	74,545	554	3081	2.5	800.7	800.7	801.7	1.0
N	77,625	600	2268	3.1	803.5	803.5	803.7	0.2
O	78,055	113	852	8.3	804.1	804.1	804.2	0.1
P	79,100	600	2936	2.4	806.3	806.3	806.5	0.2
Q	81,495	242	1340	5.3	807.5	807.5	808.2	0.7
R	83,085	658	3306	2.2	809.5	809.5	810.3	0.8
S	84,870	440	2860	2.5	810.5	810.5	811.0	0.5
T	87,970	245	1363	5.1	812.6	812.6	813.5	0.9
U	88,340	98	711	9.7	813.3	813.3	814.3	1.0
V	89,075	229	1557	4.4	816.8	816.8	816.9	0.1
W	90,705	412	2537	2.6	818.8	818.8	819.4	0.6
X	93,510	173	1146	6.0	821.8	821.8	822.6	0.8
Y	94,040	90	1049	6.0	823.1	823.1	824.0	0.9
Z	94,415	237	2126	3.0	823.9	823.9	824.6	0.7

[1] FEET ABOVE MOUTH
[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS
[3] ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM CEDAR RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

INDIAN CREEK

BEST DOCUMENT AVAILABLE

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
INDIAN CREEK								
AA	97,680	211	1157	5.5	827.5	827.5	828.2	0.7
AB	99,720	626	3220	2.0	830.6	830.6	831.1	0.5
AC	100,875	421	2175	2.9	831.3	831.3	831.7	0.4
AD	101,495	348	2214	2.6	831.7	831.7	832.2	0.5
AE	106,390	212	1175	3.6	837.4	837.4	838.2	0.8
AF	109,040	155	724	5.8	842.0	842.0	842.7	0.7
AG	110,210	219	1290	3.3	844.8	844.8	845.7	0.9
AH	111,550	71	634	6.7	846.8	846.8	847.5	0.7
AI	112,225	212	1301	3.2	848.4	848.4	848.8	0.4
AJ	113,710	238	463	9.1	850.8	850.8	851.5	0.7
AK	114,010	300	1735	2.4	854.0	854.0	854.0	0.0
AL	116,460	198	912	4.0	856.2	856.2	856.4	0.2
AM	117,865	165	801	4.5	859.5	859.5	860.3	0.8
AN	118,655	144	529	6.9	863.5	863.5	863.5	0.0
AO	119,070	300	2026	1.8	864.9	864.9	865.8	0.9
AP	121,265	216	874	4.2	868.0	868.0	868.7	0.7
AQ	122,895	187	941	3.9	871.6	871.6	872.4	0.8
AR	123,600	438	1052	3.5	874.0	874.0	874.7	0.7
AS	124,075	283	1072	3.4	875.2	875.2	875.9	0.7
AT	125,465	25	246	14.8	882.0	882.0	882.7	0.7
AU	125,835	56	731	5.0	887.4	887.4	887.6	0.2
AV	126,905	131	1329	1.8	887.5	887.5	888.1	0.6
AW	127,550	134	488	4.9	887.5	887.5	888.1	0.6
AX	128,125	204	1360	1.8	888.8	888.8	889.3	0.5
AY	130,070	78	279	8.6	892.0	892.0	892.2	0.2
AZ	132,335	182	747	3.2	901.1	901.1	902.1	1.0
BA	132,880	253	993	2.4	905.3	905.3	905.7	0.4

[1] FEET ABOVE MOUTH

TABLE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY COUNTY OF LINN, IA (UNINCORPORATED AREAS)	FLOODWAY DATA INDIAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
EAST INDIAN CREEK								
A	2065	122	677	6.6	834.0	834.0	835.0	1.0
B	5940	182	1024	4.3	843.1	843.1	844.0	0.9
C	9070	296	1248	3.6	847.8	847.8	848.6	0.8
D	9580	419	2335	1.9	848.4	848.4	849.3	0.9
E	10,405	97	850	5.2	854.0	854.0	854.7	0.7
F	10,985	315	2739	1.6	854.8	854.8	855.4	0.6
G	12,055	381	2525	1.8	855.0	855.0	855.6	0.6
H	14,335	305	1204	3.7	856.2	856.2	856.8	0.6
I	17,700	239	1161	3.8	862.8	862.8	863.7	0.9
J	19,055	132	498	5.6	866.6	866.6	867.4	0.8
K	20,910	900	1590	1.7	872.9	872.9	872.9	0.0
L	21,340	750	2025	1.4	873.2	873.2	873.2	0.0
M	23,470	498	1448	1.9	875.6	875.6	876.2	0.6

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

EAST INDIAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
DRY CREEK								
A	29,560	165/0[2]	1486	4.6	823.2	823.2	823.7	0.5
B	36,000	144	1539	4.5	830.1	830.1	831.0	0.9
C	37,320	315	2541	2.7	831.0	831.0	831.7	0.7
D	39,760	261/231[2]	2229	3.1	832.1	832.1	832.9	0.8
E	42,860	504	2922	2.4	834.0	834.0	834.8	0.8
F	54,745	229	2409	2.6	846.6	846.6	847.6	1.0
G	57,140	915	5512	1.1	847.6	847.6	848.5	0.9
H	57,815	365	1296	4.9	847.7	847.7	848.5	0.8
I	58,870	301	1949	3.2	849.5	849.5	850.4	0.9
J	61,850	272	1988	3.2	851.5	851.5	852.4	0.9
K	63,075	93	635	9.2	852.7	852.7	853.3	0.6
L	63,725	600	3015	1.9	855.3	855.3	855.5	0.2
M	66,785	288	1300	4.5	857.4	857.4	857.6	0.2
N	71,130	403	2361	2.5	861.5	861.5	862.5	1.0
O	73,720	435	2638	2.2	863.4	863.4	864.3	0.9
P	75,560	582	1555	3.8	867.6	867.6	868.2	0.6
Q	76,010	600	1641	3.6	868.8	868.8	869.5	0.7
R	78,275	700	2567	2.3	872.3	872.3	873.1	0.8
S	78,660	557	1094	5.4	872.5	872.5	873.4	0.9
T	79,085	520	3380	1.7	874.0	874.0	874.5	0.5
U	81,025	259	1897	3.1	875.2	875.2	875.6	0.4
V	82,065	621	3831	1.5	875.9	875.9	876.5	0.6
W	82,650	344	1234	4.8	876.0	876.0	876.5	0.5
X	83,080	751	4861	1.2	877.1	877.1	877.9	0.8
Y	84,455	503	2564	2.3	877.7	877.7	878.4	0.7

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

DRY CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
BUFFALO CREEK								
A	30	1255	16,093	1.0	822.9	822.9	823.8	0.9
B	1580	1789	15,192	1.1	823.0	823.0	823.9	0.9
C	2380	1348	6682	2.5	823.4	823.4	824.3	0.9
D	2995	959	7708	2.2	823.9	823.9	824.8	0.9
E	4270	1407	9871	1.7	824.4	824.4	825.3	0.9
F	7515	1105	7224	2.3	825.8	825.8	826.7	0.9
G	8555	231	1809	9.3	826.5	826.5	827.3	0.8
H	9430	767	4480	3.8	829.6	829.6	829.8	0.2
I	11,570	1028	7593	2.2	831.2	831.2	831.8	0.6
J	13,610	878	4762	3.5	832.3	832.3	832.9	0.6
K	14,245	800	4139	4.1	833.7	833.7	834.3	0.6
L	16,210	714	4821	3.5	835.5	835.5	836.1	0.6
M	20,240	977	6979	2.4	838.3	838.3	839.1	0.8
N	25,095	807	4083	4.1	841.9	841.9	842.7	0.8
O	26,115	164	1677	10.0	844.9	844.9	845.7	0.8
P	26,525	1418	9640	1.7	846.9	846.9	847.4	0.5
Q	30,095	506	3673	4.6	848.4	848.4	849.0	0.6
R	33,360	133	1828	8.9	851.8	851.8	852.7	0.9
S	35,010	143	1699	9.6	854.4	854.4	855.2	0.8
T	35,590	150	1680	9.7	855.4	855.4	856.0	0.6
U	37,935	150	1975	8.3	859.6	859.6	859.8	0.2
V	39,875	198	2376	6.9	862.0	862.0	862.2	0.2
W	41,045	300	3271	5.0	863.5	863.5	863.8	0.3
X	42,920	500	5595	2.9	865.2	865.2	865.5	0.3
Y	44,300	200	2229	7.3	865.7	865.7	866.2	0.5
Z	46,105	400	4374	3.7	867.9	867.9	868.2	0.3

[1] FEET ABOVE COUNTY BOUNDARY

TABLE 2	FEDERAL EMERGENCY MANAGEMENT AGENCY **COUNTY OF LINN, IA** (UNINCORPORATED AREAS)	**FLOODWAY DATA** **BUFFALO CREEK**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
BUFFALO CREEK								
AA	47,530	192	2353	6.9	868.9	868.9	869.7	0.8
AB	48,180	354	5038	3.2	870.0	870.0	870.6	0.6
AC	49,975	691	9403	1.7	870.7	870.7	871.4	0.7
AD	50,945	830	9617	1.7	870.9	870.9	871.6	0.7
AE	53,455	1280	10,594	1.5	871.4	871.4	872.1	0.7
AF	56,055	989	7894	2.0	872.1	872.1	872.8	0.7
AG	59,370	1468	12,003	1.3	873.1	873.1	873.9	0.8
AH	61,065	1133	6437	2.4	873.7	873.7	874.5	0.8
AI	61,600	800	4500	3.5	875.0	875.0	875.6	0.6
AJ	62,745	1159	5643	2.8	875.9	875.9	876.5	0.6
AK	65,580	1524	8700	1.8	878.3	878.3	879.1	0.8
AL	68,435	2056	10,599	1.5	879.5	879.5	880.3	0.8
AM	71,105	2340	9099	1.7	880.5	880.5	881.3	0.8
AN	74,465	958	3949	4.0	888.7	888.7	888.9	0.2
AO	75,160	1027	6476	2.4	890.0	890.0	890.1	0.1
AP	76,230	710	6369	2.5	890.5	890.5	890.8	0.3
AQ	79,595	2141	15,287	1.0	891.2	891.2	891.6	0.4
AR	82,920	622	2026	7.3	891.6	891.6	892.0	0.4
AS	83,860	155	1489	10.0	894.5	894.5	895.1	0.6
AT	84,945	564/250[2]	4418	3.4	897.5	897.5	897.7	0.2
AU	92,535	512	5426	2.7	909.8	909.8	910.2	0.4
AV	95,005	1708	17,393	0.8	910.3	910.3	910.8	0.5

[1] FEET ABOVE COUNTY BOUNDARY

[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

BUFFALO CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
OTTER CREEK								
A	5950	931	3891	2.8	742.7	742.7	743.7	1.0
B	7375	128	1244	8.8	744.6	744.6	745.5	0.9
C	8035	168	2002	5.4	746.7	746.7	747.2	0.5
D	8735	357	2976	3.7	747.4	747.4	748.1	0.7
E	10,270	544	3713	2.9	748.4	748.4	749.2	0.8
F	12,900	261	1620	6.7	750.9	750.9	751.7	0.8
G	13,750	140	1318	8.3	756.7	756.7	757.6	0.9
H	14,340	631	5921	1.7	759.0	759.0	759.6	0.6
I	15,330	338	3223	3.2	759.2	759.2	759.8	0.6
J	16,455	289	1952	5.3	760.0	760.0	760.6	0.6
K	17,595	150	1614	6.4	761.8	761.8	762.6	0.8
L	18,215	389	3592	2.9	763.5	763.5	764.2	0.7
M	19,840	215	1937	5.3	764.5	764.5	765.3	0.8
N	22,290	504	4065	2.5	767.7	767.7	768.7	1.0
O	23,965	476	4106	2.5	768.8	768.8	769.7	0.9
P	24,465	146	1419	7.3	768.9	768.9	769.8	0.9
Q	24,585	139	1630	6.3	769.5	769.5	770.1	0.6
R	25,125	220	1599	6.5	770.3	770.3	770.8	0.5
S	26,705	416	3028	3.4	772.6	772.6	772.9	0.3
T	28,405	208	1363	7.6	774.0	774.0	774.6	0.6
U	29,505	94	1293	7.5	774.6	774.6	775.5	0.9
WEST OTTER CREEK								
V	29,895	486	3229	2.0	776.4	776.4	777.2	0.8
W	30,095	447	1715	3.9	776.4	776.4	777.2	0.8
X	31,195	188	986	6.7	777.8	777.8	778.1	0.3
Y	32,155	153	1103	6.0	779.8	779.8	780.5	0.7
Z	32,905	99	745	8.9	781.4	781.4	781.6	0.2

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[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

OTTER CREEK-WEST OTTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
WEST OTTER CREEK								
AA	34,455	238	1361	4.9	786.6	786.6	787.4	0.8
AB	36,775	100	891	7.4	791.3	791.3	791.9	0.6
AC	39,255	136	1178	5.6	795.4	795.4	796.1	0.7
AD	39,947	102	1099	6.0	796.8	796.8	797.7	0.9
AE	40,447	243	2192	3.0	798.7	798.7	799.1	0.4
AF	41,897	161	1273	5.2	800.1	800.1	800.1	0.0
AG	42,457	87	863	7.7	800.7	800.7	801.0	0.3
AH	43,097	273	2259	2.9	802.4	802.4	802.9	0.5
AI	44,197	204	1641	4.0	803.0	803.0	803.6	0.6
AJ	47,297	481	1842	3.6	807.9	807.9	808.7	0.8
AK	50,807	106	775	8.5	815.2	815.2	815.8	0.6
AL	51,727	103	813	8.1	818.0	818.0	818.9	0.9
AM	52,052	159	1081	6.1	819.6	819.6	819.8	0.2
AN	53,952	132	869	7.6	823.6	823.6	824.5	0.9
AO	55,952	91	878	7.5	829.5	829.5	830.1	0.6
AP	56,492	137	1315	4.4	830.6	830.6	831.3	0.7
AQ	58,147	386	2041	2.8	832.3	832.3	833.1	0.8
AR	58,827	93	859	6.7	833.1	833.1	833.8	0.7
AS	59,167	140	770	7.5	834.2	834.2	834.6	0.4
AT	60,467	82	743	7.8	837.8	837.8	838.5	0.7
AU	61,007	252	1577	3.7	839.6	839.6	839.9	0.3
AV	63,482	191	1428	4.1	842.4	842.4	842.9	0.5
AW	64,402	252	1637	3.5	844.8	844.8	845.7	0.9
AX	64,852	285	2240	2.6	845.4	845.4	846.3	0.9
AY	68,167	188	1509	3.8	847.3	847.3	848.1	0.8
AZ	69,697	199	1414	4.1	848.6	848.6	849.4	0.8

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

WEST OTTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
WEST OTTER CREEK								
BA	70,359	232	750	7.7	851.1	851.1	851.8	0.7
BB	70,889	263	2191	2.6	853.3	853.3	854.2	0.9
BC	72,869	289	1679	3.4	854.4	854.4	855.2	0.8
BD	73,583	165	784	7.4	856.9	856.9	857.9	1.0
BE	74,323	373	3294	1.8	859.0	859.0	859.9	0.9
BF	78,033	372	2534	1.9	859.8	859.8	860.7	0.9
BG	79,033	67	509	9.4	860.0	860.0	860.9	0.9
BH	79,393	346	2568	1.9	862.6	862.6	863.1	0.5
BI	83,513	342	1892	2.5	865.1	865.1	866.0	0.9
BJ	87,838	338	1788	2.7	869.4	869.4	870.3	0.9
BK	91,238	218	1063	3.7	873.0	873.0	873.9	0.9
BL	96,538	662	2432	1.6	879.1	879.1	880.0	0.9
BM	98,038	220	1033	3.8	880.9	880.9	881.7	0.8
BN	99,258	483	1272	3.1	883.0	883.0	883.8	0.8
BO	100,213	613	2458	1.6	884.4	884.4	885.3	0.9
BP	104,063	490	1913	2.1	890.0	890.0	890.8	0.8
BQ	105,288	664	2934	1.3	891.0	891.0	891.8	0.8

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[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

WEST OTTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
EAST OTTER CREEK								
A	1800	527	3008	2.1	775.8	775.8	776.6	0.8
B	4600	350	1428	4.5	779.4	779.4	780.0	0.6
C	5680	94	815	7.8	782.0	782.0	782.1	0.1
D	7495	411	2129	3.0	784.8	784.8	785.8	1.0
E	7915	89	711	9.0	785.8	785.8	786.6	0.8
F	8635	526	3605	1.8	788.4	788.4	788.8	0.4
G	9655	390	942	6.8	789.1	789.1	789.1	0.0
H	12,255	409	1869	3.4	797.8	797.8	798.2	0.4
I	14,855	211	1202	5.3	804.1	804.1	805.0	0.9
J	15,935	60	458	13.9	808.8	808.8	808.8	0.0
K	16,415	312	1577	4.0	812.1	812.1	813.0	0.9
L	19,540	227	1210	5.3	821.2	821.2	821.8	0.6
M	22,800	171	1265	5.0	828.5	828.5	829.3	0.8
N	23,480	51	554	11.5	831.7	831.7	832.2	0.5
O	23,960	171	1880	3.4	835.4	835.4	835.7	0.3
P	25,100	200	1713	3.7	836.2	836.2	836.7	0.5
Q	25,420	229	2402	2.7	836.5	836.5	837.1	0.6
R	26,470	138	1117	5.7	837.0	837.0	837.6	0.6
S	27,940	62	637	10.0	842.2	842.2	843.1	0.9
T	28,660	249	2347	2.7	845.3	845.3	845.7	0.4
U	30,130	248	1668	3.8	846.3	846.3	846.8	0.5
V	31,190	57	512	9.3	848.7	848.7	849.5	0.8
W	31,510	308	2053	2.3	851.1	851.1	851.5	0.4
X	34,110	256	1329	3.6	854.4	854.4	855.2	0.8
Y	36,170	261	1338	3.6	858.2	858.2	859.1	0.9
Z	38,130	116	709	6.7	862.5	862.5	863.3	0.8

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

EAST OTTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
EAST OTTER CREEK								
AA	39,020	55	549	8.7	865.2	865.2	866.0	0.8
AB	39,360	296	2042	2.3	867.1	867.1	867.5	0.4
AC	41,410	209	799	6.0	868.9	868.9	869.5	0.6
AD	43,195	343	1494	3.2	873.8	873.8	874.3	0.5
AE	44,315	202	1558	3.1	874.9	874.9	875.4	0.5
AF	46,815	143	1121	4.2	876.9	876.9	877.8	0.9
AG	48,435	264	2003	1.9	879.1	879.1	880.0	0.9
AH	51,035	173	950	3.9	881.9	881.9	882.8	0.9
AI	51,555	48	354	10.5	884.2	884.2	884.2	0.0
AJ	51,975	254	1895	2.0	886.0	886.0	886.8	0.8
AK	54,825	188	896	4.1	889.0	889.0	890.0	1.0
AL	58,445	190	1232	3.0	893.4	893.4	894.2	0.8

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

EAST OTTER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
PRAIRIE CREEK								
A	30	802	3895	4.3	739.6	739.6	740.6	1.0
B	620	1183	14,365	1.2	740.1	740.1	741.1	1.0
C	2620	1269	13,077	1.3	740.2	740.2	741.2	1.0
D	4970	1242	10,786	1.5	740.5	740.5	741.5	1.0
E	5490	1406	10,808	1.5	740.7	740.7	741.7	1.0
F	6135	735	6458	2.6	740.8	740.8	741.7	0.9
G	9435	868	5935	2.8	742.5	742.5	743.4	0.9
H	11,910	622	4801	3.4	743.9	743.9	744.8	0.9
I	16,035	885	5473	3.0	746.9	746.9	747.8	0.9
J	17,055	268	2736	6.0	748.1	748.1	748.9	0.8
K	19,325	794/750[2]	6479	2.5	749.9	749.9	750.6	0.7
L	26,375	1235	6780	2.4	756.0	756.0	756.7	0.7
M	30,125	910	4461	3.5	758.2	758.2	759.0	0.8
N	34,125	1531	7707	2.0	760.9	760.9	761.8	0.9
O	37,825	1216	5774	2.7	763.6	763.6	764.4	0.8
P	39,345	1001	4658	3.4	765.8	765.8	766.7	0.9

[1] FEET ABOVE EDGEWOOD ROAD

[2] TOTAL WIDTH / WIDTH WITHIN UNINCORPORATED AREAS

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOODWAY DATA

PRAIRIE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
MORGAN CREEK								
A	1040	150	971	6.2	734.7	728.0[2]	728.9	0.9
B	1157	110	721	8.3	734.7	729.0[2]	729.9	0.9
C	1527	357	2552	2.4	734.7	731.2[2]	731.6	0.4
D	3717	357	1531	3.9	734.7	733.4[2]	734.3	0.9
E	4857	114	841	7.1	736.1	736.1	737.0	0.9
F	5387	427	2914	2.1	737.7	737.7	738.3	0.6
G	6252	282	1828	3.3	738.0	738.0	738.6	0.6
H	7904	218	856	6.7	741.1	741.1	741.2	0.1
I	8586	215	1576	3.6	743.8	743.8	744.4	0.6
J	11,176	162	934	6.1	747.1	747.1	748.1	1.0
K	14,136	150	965	5.9	754.5	754.5	755.3	0.8
L	14,951	54	551	10.4	757.2	757.2	757.8	0.6
M	15,277	402	3106	1.8	759.7	759.7	760.0	0.3
N	16,417	85	768	6.7	760.5	760.5	761.3	0.8
O	17,202	92	768	6.7	762.2	762.2	762.5	0.3
P	20,097	295	1545	3.3	765.9	765.9	766.9	1.0
Q	22,697	132	633	7.4	771.0	771.0	771.4	0.4
R	24,042	136	669	7.0	775.7	775.7	775.8	0.1
S	24,624	547	2483	1.9	776.9	776.9	777.5	0.6
T	26,874	88	579	8.1	779.1	779.1	779.8	0.7
U	27,669	73	644	7.3	781.9	781.9	782.8	0.9
V	28,139	375	2144	2.2	783.6	783.6	784.2	0.6
W	31,035	231	1044	4.5	785.8	785.8	786.5	0.7
X	31,871	321	737	5.9	788.9	788.9	788.9	0.0
Y	32,523	608	2675	1.6	790.8	790.8	791.4	0.6
Z	35,523	311	1191	3.7	797.0	797.0	797.5	0.5
AA	37,603	342	1393	3.1	800.6	800.6	801.2	0.6

[1] FEET ABOVE MOUTH

[2] ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM CEDAR RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

MORGAN CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
SQUAW CREEK								
A	400	244	1667	3.3	712.0	708.5[2]	709.5	1.0
B	1700	200	617	9.0	712.0	711.3[2]	711.4	0.1
C	2780	98	706	7.9	716.2	716.2	717.2	1.0
D	3000	182	1077	5.2	717.9	717.9	718.0	0.1
E	4340	355	3000	1.9	718.8	718.8	719.4	0.6
F	5645	326	860	6.5	719.8	719.8	720.2	0.4
G	6337	96	819	6.8	722.6	722.6	723.2	0.6
H	6625	183	981	5.7	723.5	723.5	723.6	0.1
I	8205	100	525	9.4	731.5	731.5	731.5	0.0
J	10,345	159	1099	4.5	739.0	739.0	739.8	0.8
K	12,915	82	572	8.6	745.4	745.4	746.3	0.9
L	13,775	70	548	9.0	749.9	749.9	750.7	0.8
M	14,570	341	1735	2.8	752.5	752.5	753.0	0.5
N	15,250	45	329	15.0	752.5	752.5	752.5	0.0
O	16,230	212	1591	3.1	756.7	756.7	756.9	0.2
P	18,545	279	1885	2.6	758.2	758.2	758.7	0.5
Q	20,685	170	765	6.5	762.3	762.3	763.1	0.8
R	22,315	453	2306	2.1	766.5	766.5	767.5	1.0
S	24,660	159	819	6.0	769.2	769.2	770.0	0.8
T	26,500	539	2461	1.8	772.8	772.8	773.8	1.0
U	27,280	211	1000	4.5	773.8	773.8	774.6	0.8
V	28,460	186	1253	3.6	776.1	776.1	777.0	0.9
W	30,765	464	2729	1.7	777.8	777.8	778.7	0.9
X	31,650	40	408	11.1	779.2	779.2	780.1	0.9
Y	32,080	297	2128	2.1	782.1	782.1	782.5	0.4
Z	32,395	73	495	7.9	782.1	782.1	782.5	0.4
AA	36,000	400	1518	2.6	785.3	785.3	786.1	0.8

[1] FEET ABOVE MOUTH

[2] ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM CEDAR RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOODWAY DATA

SQUAW CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
HOOSIER CREEK								
A	30	667	1517	4.2	710.0	710.0	710.8	0.8
B	1795	385	1239	5.2	713.0	713.0	713.9	0.9
C	2815	154	785	8.2	716.8	716.8	717.5	0.7
D	3585	141	1002	6.4	719.4	719.4	720.0	0.6
E	10,590	357	1839	3.0	730.7	730.7	731.6	0.9
F	12,180	209	1072	5.2	733.0	733.0	733.8	0.8
G	12,720	169	891	3.8	734.4	734.4	735.3	0.9
H	13,945	130	758	4.5	736.7	736.7	737.5	0.8
I	14,985	93	545	6.2	739.0	739.0	739.7	0.7
J	17,165	106	644	5.3	745.7	745.7	746.6	0.9
K	17,825	50	414	8.2	748.1	748.1	748.9	0.8
L	18,055	194	1011	3.4	749.7	749.7	750.2	0.5
M	18,880	222	1016	3.4	752.5	752.5	752.7	0.2
N	20,220	66	379	9.0	753.9	753.9	754.6	0.7
O	21,925	214	974	3.5	759.4	759.4	759.7	0.3
P	23,905	61	384	8.9	762.6	762.6	763.6	1.0
Q	25,620	257	1359	2.5	767.4	767.4	768.2	0.8
R	25,925	337	1192	2.3	768.9	768.9	769.5	0.6
S	26,095	255	1149	2.3	769.1	769.1	769.7	0.6
T	27,460	41	255	1.6	771.3	771.3	771.3	0.0
U	29,090	148	614	4.4	778.1	778.1	779.0	0.9
V	31,495	139	712	3.8	785.4	785.4	786.3	0.9
W	33,250	79	359	7.5	789.0	789.0	789.9	0.9

[1] FEET ABOVE COUNTY BOUNDARY

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOODWAY DATA

HOOSIER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
SOUTH HOOSIER CREEK								
A	155	250	1673	2.4	733.8	733.8	734.8	1.0
B	1480	128	670	6.1	735.4	735.4	736.1	0.7
C	5490	272	1216	3.4	745.2	745.2	746.1	0.9
D	6275	46	423	9.6	747.9	747.9	748.6	0.7
E	6620	268	1587	2.6	750.4	750.4	750.7	0.3
F	7995	294	1329	3.1	751.6	751.6	752.1	0.5
G	8810	105	482	8.5	752.7	752.7	753.2	0.5
H	9930	182	1045	3.9	756.8	756.8	757.8	1.0
I	11,360	208	1145	3.6	759.1	759.1	759.9	0.8
J	12,275	176	893	4.6	760.6	760.6	761.5	0.9
K	13,110	40	389	9.0	762.6	762.6	763.4	0.8
L	13,330	173	1219	2.9	764.3	764.3	765.0	0.7
M	15,350	243	920	3.8	765.9	765.9	766.6	0.7
N	16,535	156	765	4.6	768.2	768.2	769.0	0.8
O	17,450	62	488	7.2	770.7	770.7	771.4	0.7
P	17,920	154	796	4.4	772.3	772.3	772.6	0.3
Q	22,005	112	511	5.9	780.8	780.8	781.7	0.9
R	23,730	128	636	4.7	786.4	786.4	787.3	0.9
S	25,005	253	1051	2.9	789.2	789.2	790.1	0.9

---

[1] FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

SOUTH HOOSIER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (NGVD)	WITHOUT FLOODWAY (NGVD)	WITH FLOODWAY (NGVD)	INCREASE (FEET)
SIMMONS CREEK								
A	450	438[2]	3299	2.8	760.7	760.7	761.7	1.0
B	1460	319	1865	2.2	763.6	763.6	764.5	0.9
C	2070	248	904	4.5	763.9	763.9	764.8	0.9
D	2600	387	1550	2.6	770.7	770.7	771.4	0.7
E	3090	263	1721	2.4	771.1	771.1	771.8	0.7
F	4262	58	307	13.2	773.6	773.6	773.6	0.0
G	5747	47	459	8.8	783.2	783.2	783.9	0.7
H	8377	186	1158	3.2	792.3	792.3	793.0	0.7
I	10,212	139	544	6.9	795.4	795.4	795.7	0.3
J	11,282	56	400	9.3	801.3	801.3	802.0	0.7
K	12,777	36	371	10.0	813.4	813.4	814.2	0.8
L	13,097	174	1506	2.4	815.8	815.8	816.4	0.6
M	13,522	66	684	5.2	815.9	815.9	816.7	0.8
N	15,267	174	996	3.6	819.0	819.0	819.9	0.9
O	15,787	40	373	9.6	823.7	823.7	824.5	0.8
TISSEL HOLLOW								
A	425	279	1314	1.9	743.6	743.6	744.4	0.8
B	1145	56	367	6.8	747.6	747.6	748.4	0.8
C	1455	225	713	3.5	749.0	749.0	749.6	0.6
D	3405	56	342	6.4	756.1	756.1	756.7	0.6
E	4525	68	312	7.0	761.9	761.9	762.4	0.5
F	4805	39	364	6.0	763.1	763.1	764.0	0.9
G	5799	12	112	13.7	766.5	766.5	766.7	0.2
H	6163	70	671	2.7	771.7	771.7	771.8	0.1
I	8663	40	242	7.4	779.1	779.1	779.8	0.7

[1] FEET ABOVE MOUTH

[2] COMBINED FLOODWAY WIDTH OF BIG CREEK AND SIMMONS CREEK

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

FLOODWAY DATA

SIMMONS CREEK - TISSEL HOLLOW

The floodways in this report are recommended to local agencies as minimum standards that can be adopted or that can be used as a basis for additional studies.

5.0 INSURANCE APPLICATION

In order to establish actuarial insurance rates, FEMA has developed a process to transform the data from the engineering study into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors (FHF), and flood insurance zone designations for each flooding source affecting Linn County.

5.1 Reach Determinations

Reaches are defined as lengths of watercourses having relatively the same flood hazard, based on the average weighted difference in water-surface elevations between the 10- and 100-year floods. This difference does not have a variation greater than that indicated in the following table for more than 20 per cent of the reach.

Average Difference Between 10- and 100-year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for Linn County are shown on the Flood Profiles and are summarized in Table 3, "Flood Insurance Zone Data."

5.2 Flood Hazard Factors

The FHF is used to correlate flood information with insurance rate tables. Correlations between property damage from floods and their FHFs are used to set actuarial insurance premium rate tables based on FHFs from 005 to 200.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations expressed to the nearest 0.5 foot, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, accuracy for the FHF is to the nearest foot.

5.3 Flood Insurance Zones

After the determination of reaches and their respective FHFs, the entire unincorporated areas of Linn County were divided into zones, each having a specific flood potential or hazard. Each zone was assigned one of the following flood insurance zone designations:

Zone A:	Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations are shown or FHFs determined.
Zones A4-A12, A16:	Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations are shown, and zones subdivided according to FHF.
Zone B:	Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; or areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.
Zone C:	Areas of minimal flooding.

Table 3, "Flood Insurance Zone Data," summarizes the flood elevation differences, FHFs, flood insurance zones, and base flood elevations for each flooding source studied in detail in the community.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for Linn County is, for insurance purposes, the principal result of the Flood Insurance Study. This map (published separately) contains the official delineation of flood insurance zones and base flood elevation lines. Base flood elevation lines show the locations of the expected whole-foot water-surface elevations of the base (100-year) flood. This map is developed in accordance with the latest flood insurance map preparation guidelines published by FEMA.

6.0 OTHER STUDIES

The results of the Linn County Flood Insurance Study were compared to discharges contained in previously published reports. Reports available on the streams studied in detail are as follows:

1. USGS Open-File Reports
   - a. Cedar River Basin Floods ISHC - Bulletin No. 27 (Reference 17)
   - b. Floods on Otter Creek in Linn County, Iowa (Reference 12)
   - c. Flood Profile Study, Squaw Creek, Linn County, Iowa (Reference 18)
   - d. Flood Profile Study, Morgan Creek, Linn County (Reference 10)
   - e. Flood Profile Study, Hoosier Creek, Linn County (Reference 19)
   - f. Floods in the Wapsipinicon River Basin, (Reference 11)
   - g. Floods in Big Creek Basin, Linn County (Reference 9)

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
CEDAR RIVER							
REACH 1	0115,0135,0140	–3.6	–0.6	1.2	035	A7	VARIES–SEE MAP
REACH 2[4]	0110,0115	–4.5	–1.2	2.8	045	A9	VARIES–SEE MAP
REACH 3[4]	0085,0090	–5.5	–1.6	3.8	055	A11	VARIES–SEE MAP
REACH 4	0025,0045 0065,0085	–3.8	–1.0	2.4	040	A8	VARIES–SEE MAP
WAPSIPINICON RIVER							
REACH 1	0060	–7.8	–2.2	4.7	080	A16	VARIES–SEE MAP
REACH 2	0035,0040 0055,0060	–5.9	–1.7	3.9	060	A12	VARIES–SEE MAP
REACH 3	0010,0015 0030,0035	–5.1	–1.4	3.0	050	A10	VARIES–SEE MAP
MARTINS CREEK							
REACH 1	0095	–2.2	–0.4	0.8	020	A4	VARIES–SEE MAP
REACH 2	0095	–6.0	–4.2	2.0	060	A12	VARIES–SEE MAP
BIG CREEK							
REACH 1	0080,0095 0100,0115	–3.3	–1.0	2.1	035	A7	VARIES–SEE MAP

[1] FLOOD INSURANCE RATE MAP PANEL

[2] WEIGHTED AVERAGE

[3] ROUNDED TO NEAREST FOOT

[4] DATA FOR THIS REACH TAKEN FROM CITY OF CEDAR RAPIDS, IOWA FIS

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

CEDAR RIVER - WAPSIPINICON RIVER - MARTINS CREEK - BIG CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
BLUE CREEK							
REACH 1	0025	–2.3	–0.7	1.5	025	A5	VARIES–SEE MAP
EAST BLUE CREEK							
REACH 1	0005,0025	–2.3	–0.7	1.5	025	A5	VARIES–SEE MAP
INDIAN CREEK							
REACH 1	0090,0095	–2.9	–0.8	2.0	030	A6	VARIES–SEE MAP
REACH 2	0055,0075	–2.5	–0.7	4.5	025	A5	VARIES–SEE MAP
EAST INDIAN CREEK							
REACH 1	0055	–2.1	–0.7	1.5	020	A4	VARIES–SEE MAP
DRY CREEK							
REACH 1[4]	0090	–2.6	–0.8	1.7	025	A5	VARIES–SEE MAP
REACH 2[4]	0070	–2.6	–0.8	1.7	025	A5	VARIES–SEE MAP
REACH 3[4]	0070	–2.6	–0.8	1.7	025	A5	VARIES–SEE MAP
REACH 4[4]	0070	–2.6	–0.8	1.7	025	A5	VARIES–SEE MAP
REACH 5	0050,0070	–2.6	–0.8	1.7	025	A5	VARIES–SEE MAP

[1] FLOOD INSURANCE RATE MAP PANEL

[2] WEIGHTED AVERAGE

[3] ROUNDED TO NEAREST FOOT

[4] DATA FOR THIS REACH TAKEN FROM CITY OF CEDAR RAPIDS, IOWA FIS

[5] DATA FOR THIS REACH TAKEN FROM CITY OF MARION, IOWA FIS

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

BLUE CREEK - EAST BLUE CREEK - INDIAN CREEK - EAST INDIAN CREEK - DRY CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
BUFFALO CREEK							
REACH 1	0040,0060	–2.9	–0.8	1.7	030	A6	VARIES–SEE MAP
REACH 2	0015,0020,0035 0040	–4.5	–1.4	3.1	045	A9	VARIES–SEE MAP
REACH 3	0015	–2.6	–0.8	1.7	025	A5	VARIES–SEE MAP
OTTER CREEK							
REACH 1	0065,0070	–2.7	–0.8	1.6	025	A5	VARIES–SEE MAP
WEST OTTER CREEK							
REACH 1	0005,0025,0030 0045,0050,0065	–2.7	–0.8	1.6	025	A5	VARIES–SEE MAP
EAST OTTER CREEK							
REACH 1	0030,0050,0070	–2.6	–0.8	1.8	025	A5	VARIES–SEE MAP
PRAIRIE CREEK							
REACH 1	0105,0110	–2.5	–0.7	1.9	025	A5	VARIES–SEE MAP
REACH 2	0105	–2.5	–0.7	1.9	025	A5	VARIES–SEE MAP

[1] FLOOD INSURANCE RATE MAP PANEL

[2] WEIGHTED AVERAGE

[3] ROUNDED TO NEAREST FOOT

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

BUFFALO CREEK - OTTER CREEK -
WEST OTTER CREEK - EAST OTTER CREEK - PRAIRIE CREEK

FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FLOOD HAZARD FACTOR	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10-YEAR)	2% (50-YEAR)	0.2% (500-YEAR)			
MORGAN CREEK							
REACH 1	0085,0105	–2.4	–0.7	1.5	025	A5	VARIES–SEE MAP
SQUAW CREEK							
REACH 1	0095	–2.3	–0.7	1.4	025	A5	VARIES–SEE MAP
HOOSIER CREEK							
REACH 1	0130,0135	–2.1	–0.6	1.3	020	A4	VARIES–SEE MAP
SOUTH HOOSIER CREEK							
REACH 1	0130	–2.2	–0.7	1.4	020	A4	VARIES–SEE MAP
SIMMONS CREEK							
REACH 1	0095,0100	–2.7	–0.9	2.4	025	A5	VARIES–SEE MAP
TISSEL HOLLOW							
REACH 1	0105,0125	–2.3	–1.0	1.4	025	A5	VARIES–SEE MAP

[1] FLOOD INSURANCE RATE MAP PANEL

[2] WEIGHTED AVERAGE

[3] ROUNDED TO NEAREST FOOT

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

FLOOD INSURANCE ZONE DATA

MORGAN CREEK - SQUAW CREEK - HOOSIER CREEK - SOUTH HOOSIER CREEK - SIMMONS CREEK - TISSEL HOLLOW

2. Iowa Natural Resources Council Flood Plain Encroachment and Flood Profile Reports
    a. Prairie Creek, Linn County, Flood Plain Encroachment Study (Reference 20)
    b. Indian and Dry Creeks, Linn County, Iowa, Flood Plain Encroachment Study (Reference 21)

3. COE Flood Plain Information Studies
    a. Indian and Dry Creeks at Cedar Rapids (Reference 22)
    b. Prairie Creek at Cedar Rapids (Reference 8)
    c. Cedar River in Linn County, Iowa (Reference 7)

The discharges contained in the above reports do not agree with the discharges developed in the Linn County Flood Insurance Study. The discharges differ because of 1) different methodologies used to develop the hydrology; 2) additional data which has been obtained since these other reports were published; and 3) different locations in which discharges were determined. The discharges and methodologies used in this report are agreeable or commensurate with those used in adjoining Flood Insurance Studies in Cedar Rapids, Marion, Palo, Robins, Hiawatha, Center Point and Central City, Iowa (References 6, 14 and 23-27).

A Flood Hazard Boundary Map has been published for the community (Reference 16). The differences between the Flood Hazard Boundary Map and this study are justified due to the more detailed nature of this Flood Insurance Study.

This report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the National Flood Insurance Program.

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, Federal Emergency Management Agency, 911 Walnut Street, Kansas City, Missouri 64106.

8.0 REFERENCES AND BIBLIOGRAPHY

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24. ————, Flood Insurance Study, City of Robins, Iowa, (in progress).

25. ————, Flood Insurance Study, City of Hiawatha, Iowa, (in progress).

26. ————, Flood Insurance Study, City of Center Point, Iowa, (in progress).

27. ————, Flood Insurance Study, City of Central City, Iowa, (in progress).

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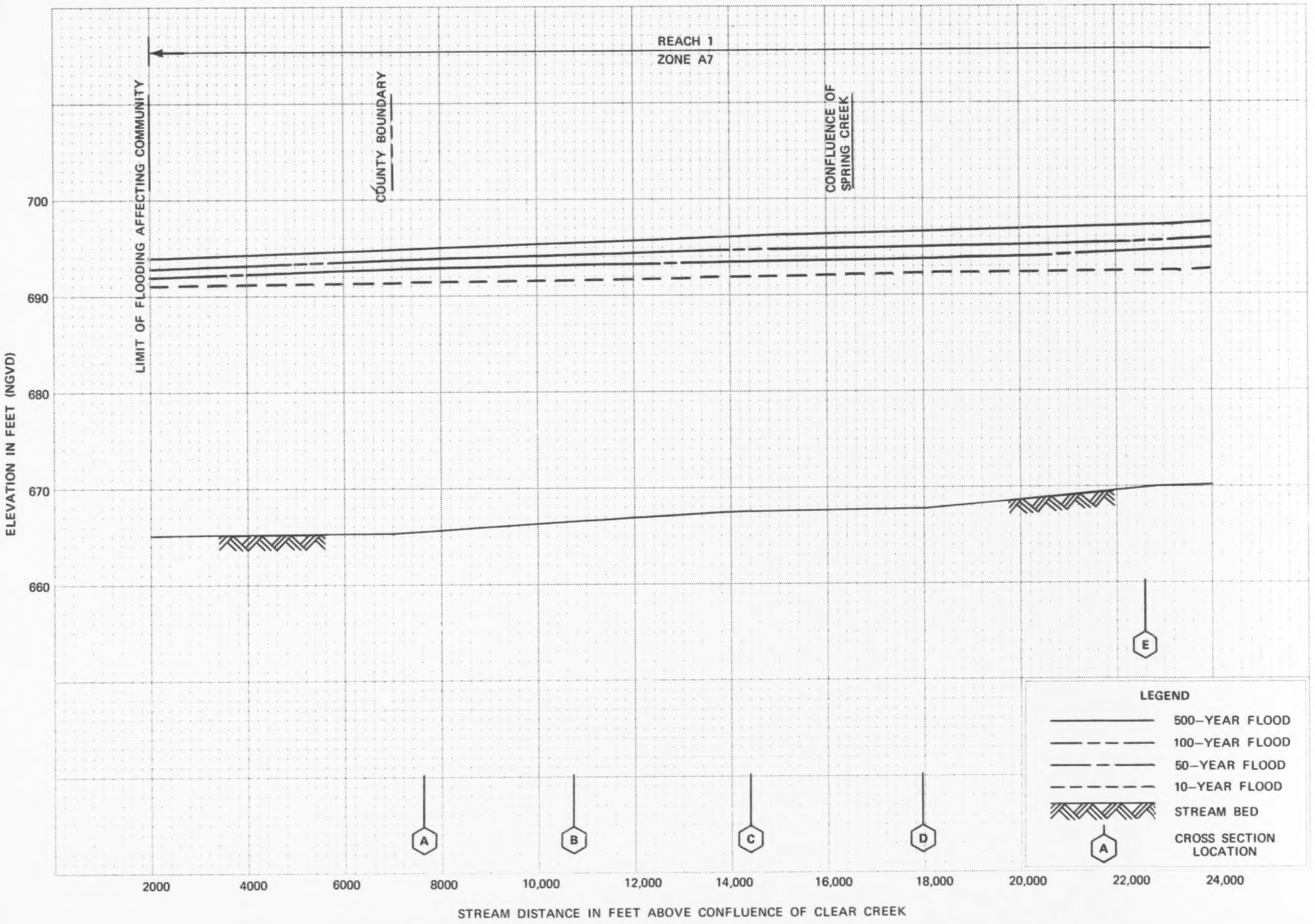

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

01P

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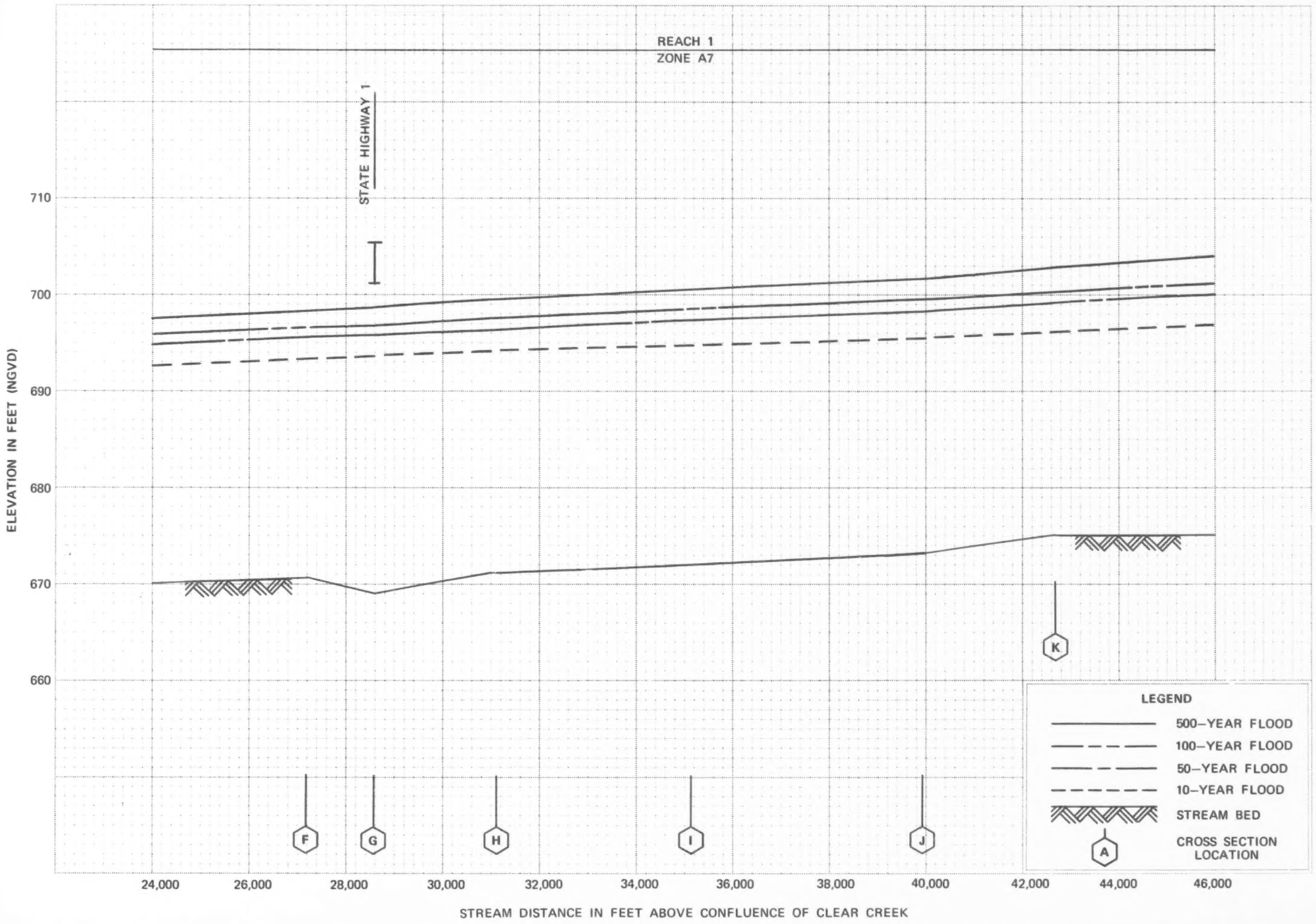
BEST DOCUMENT AVAILABLE



FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

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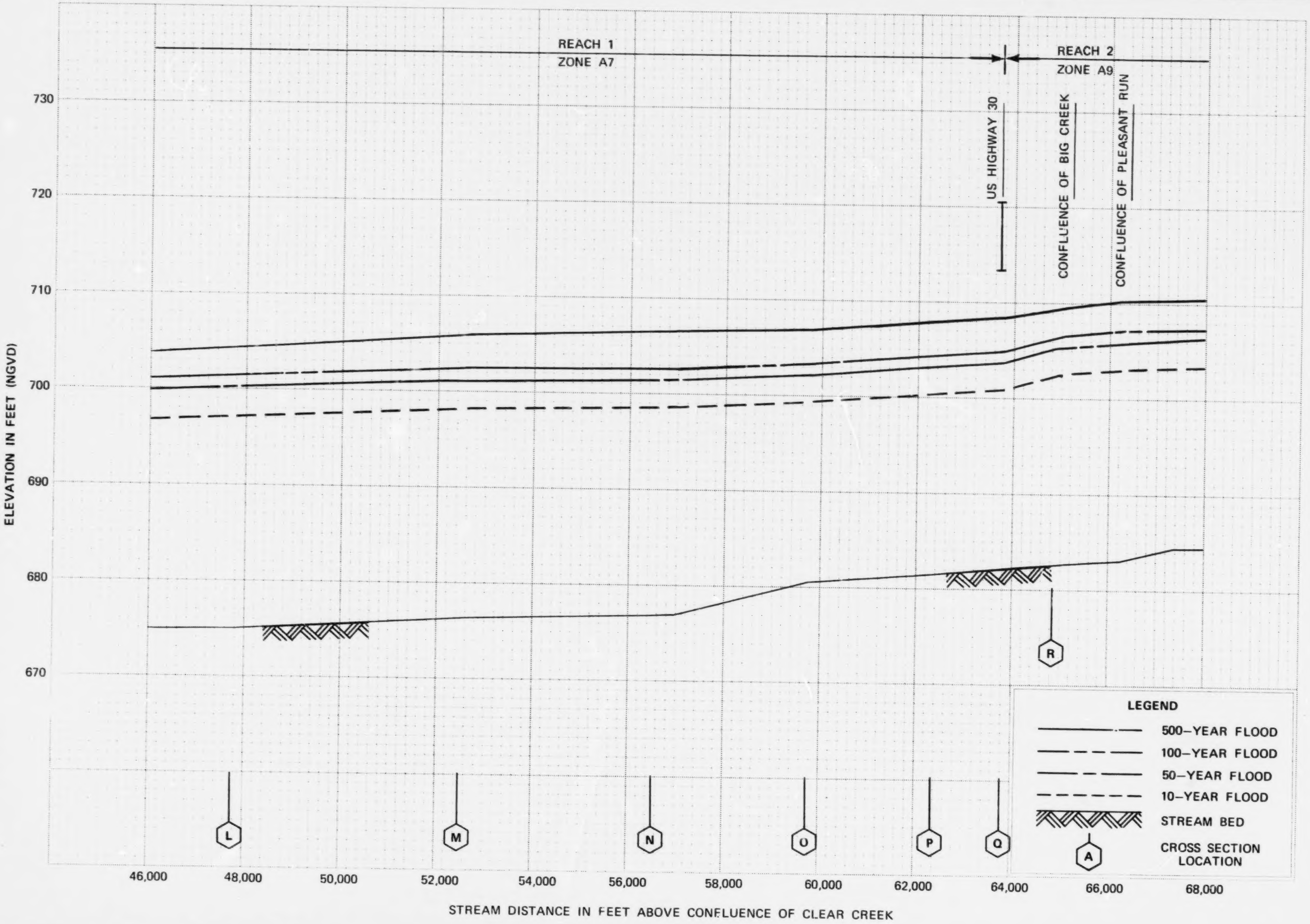

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

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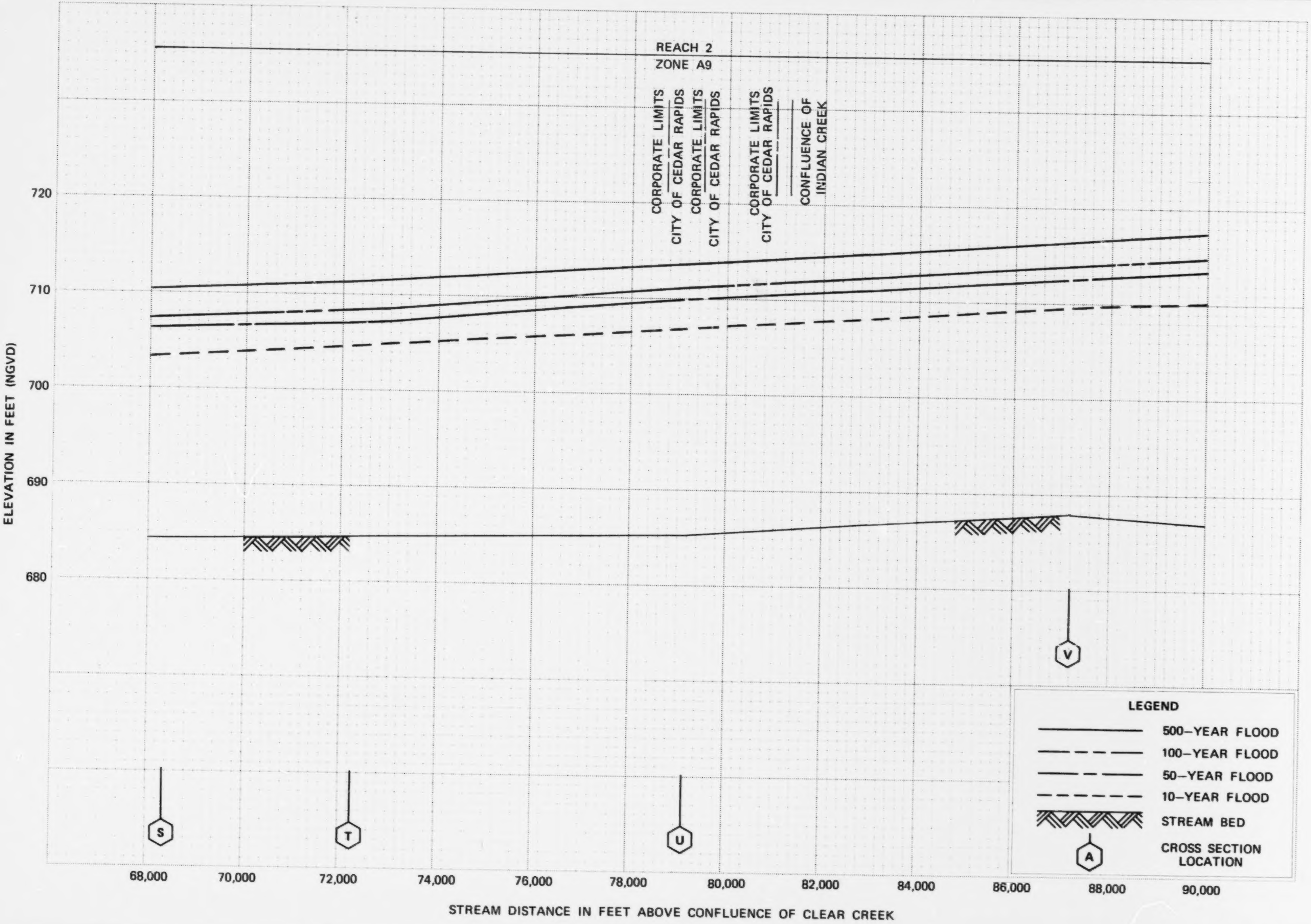

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

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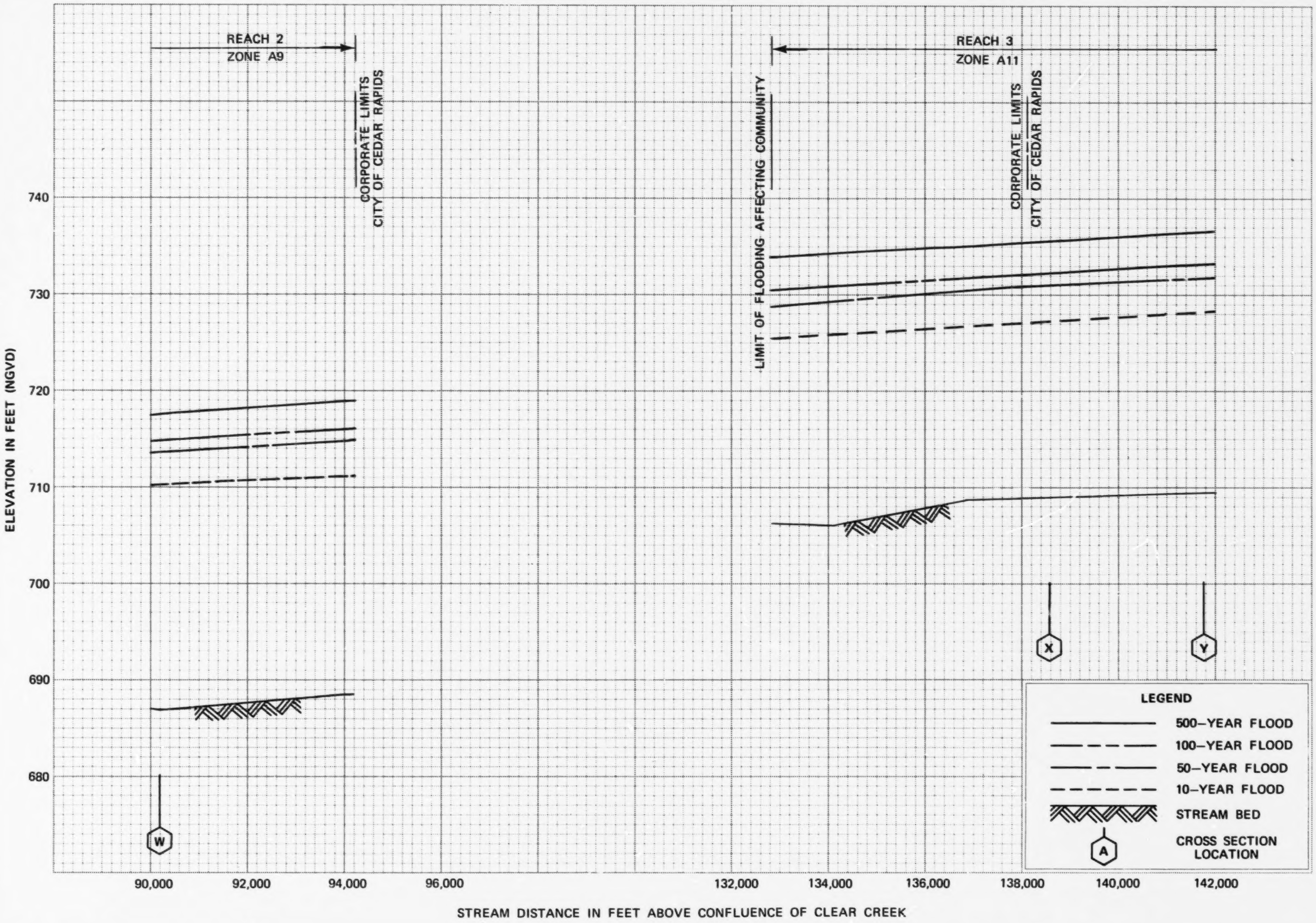

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

05P

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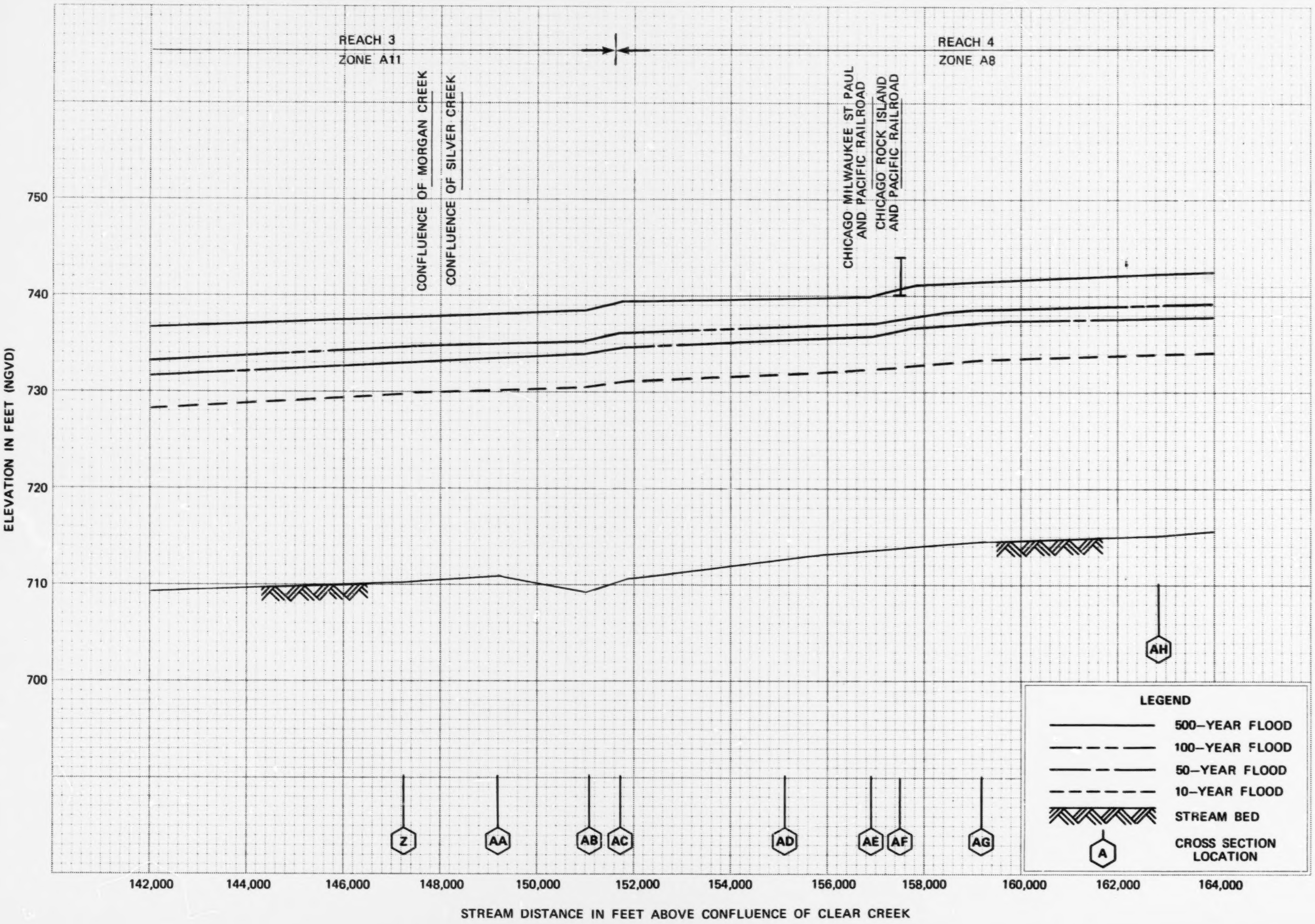

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

06P

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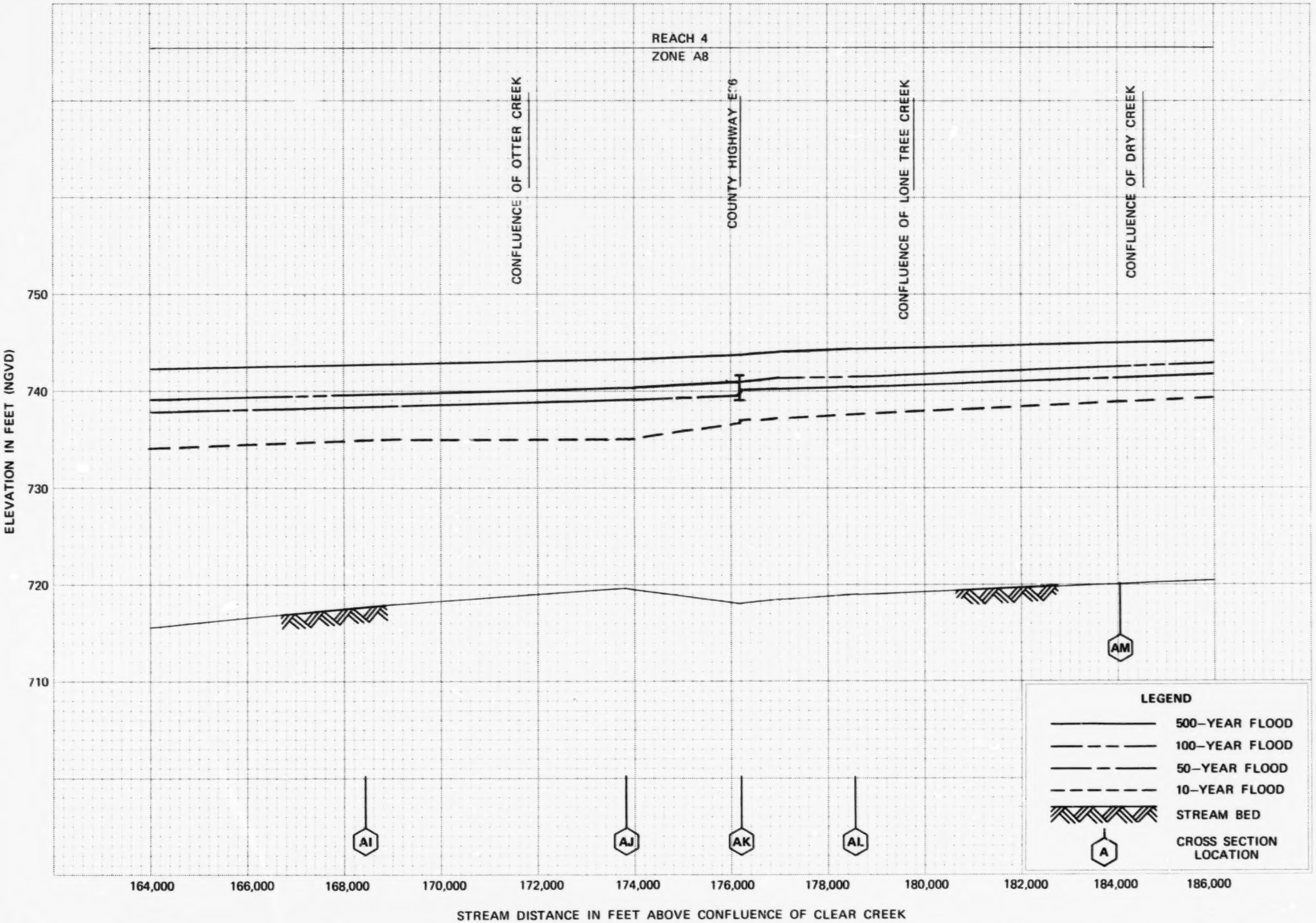

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

07P

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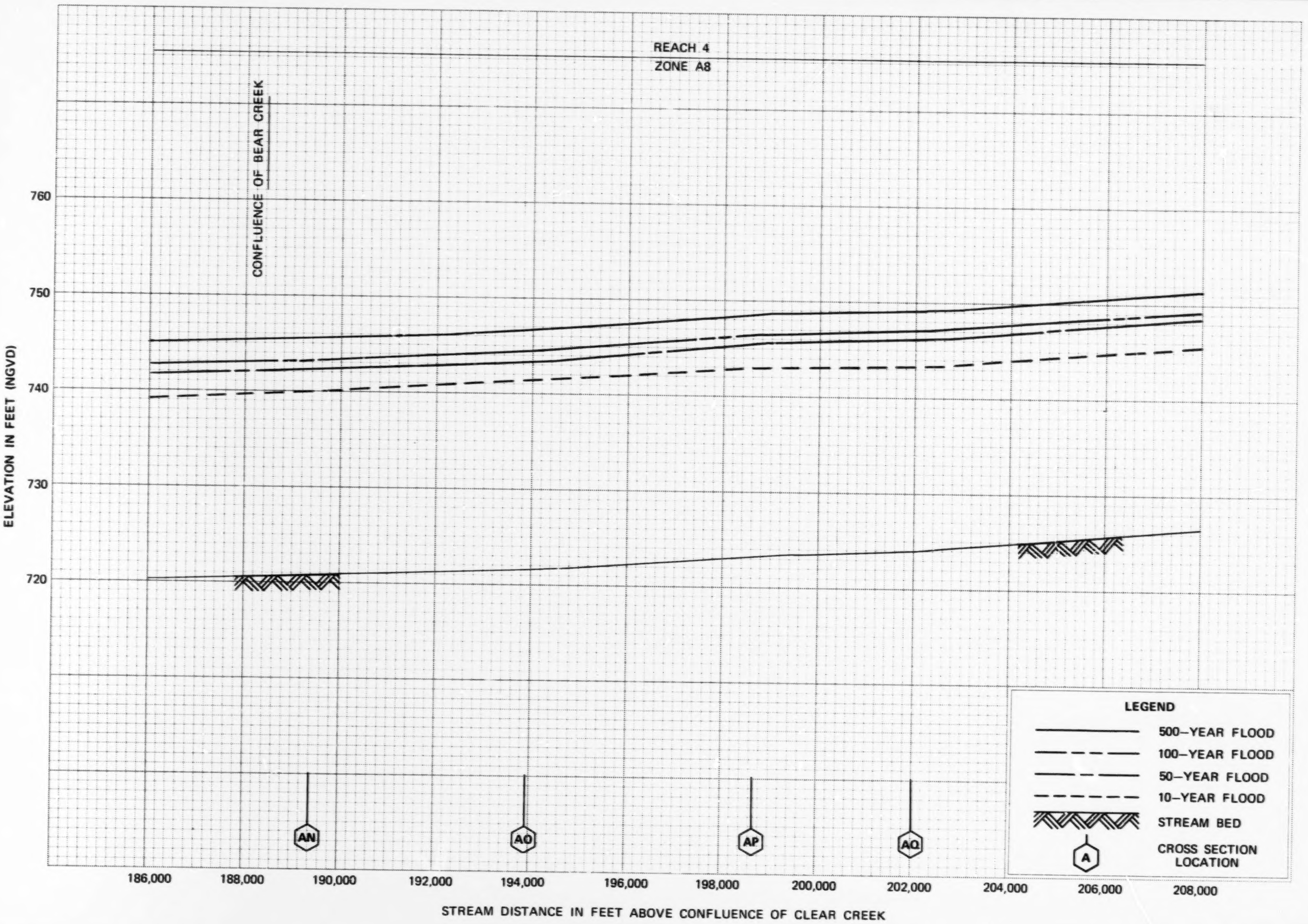

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

08P

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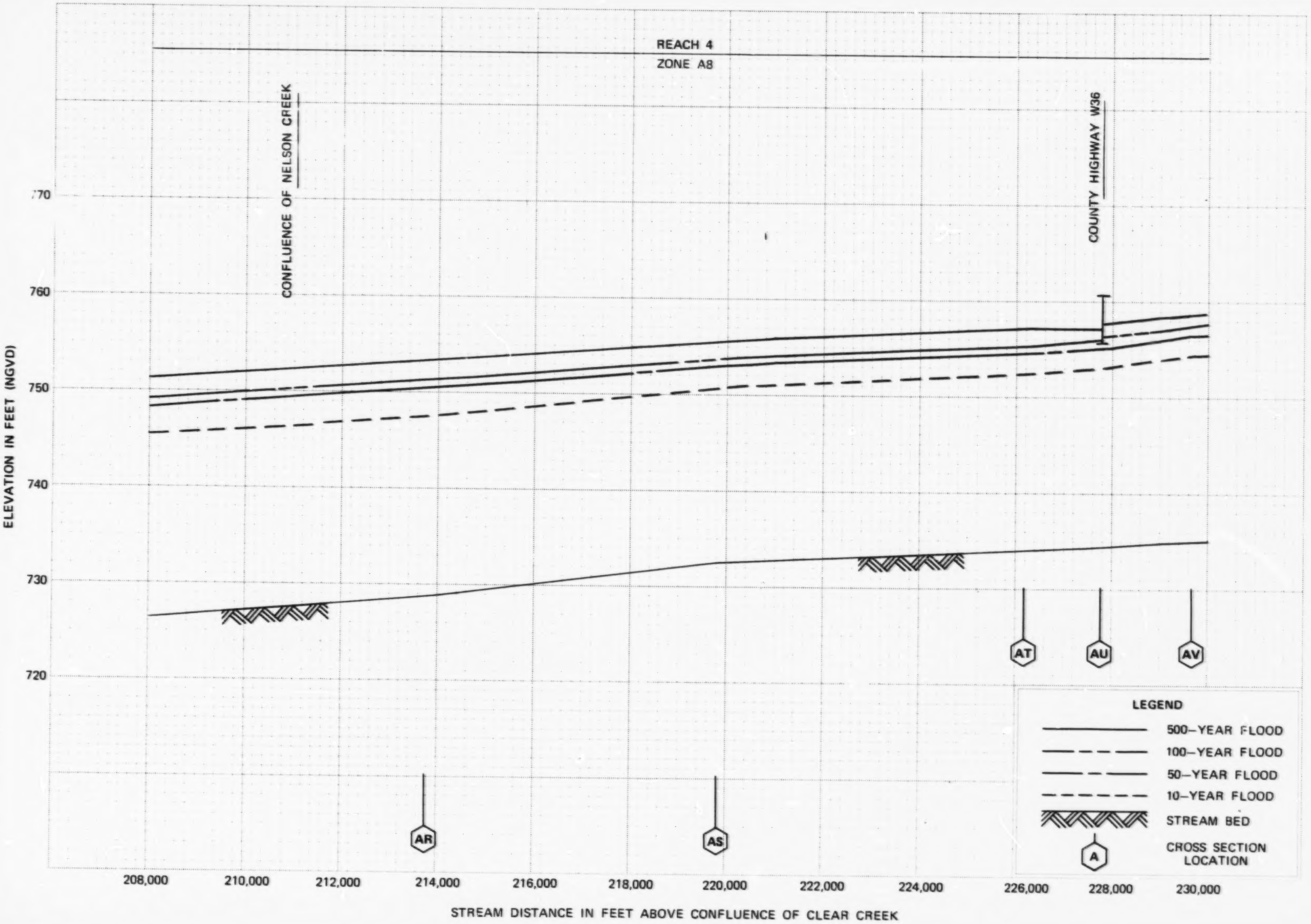

FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

09P

60

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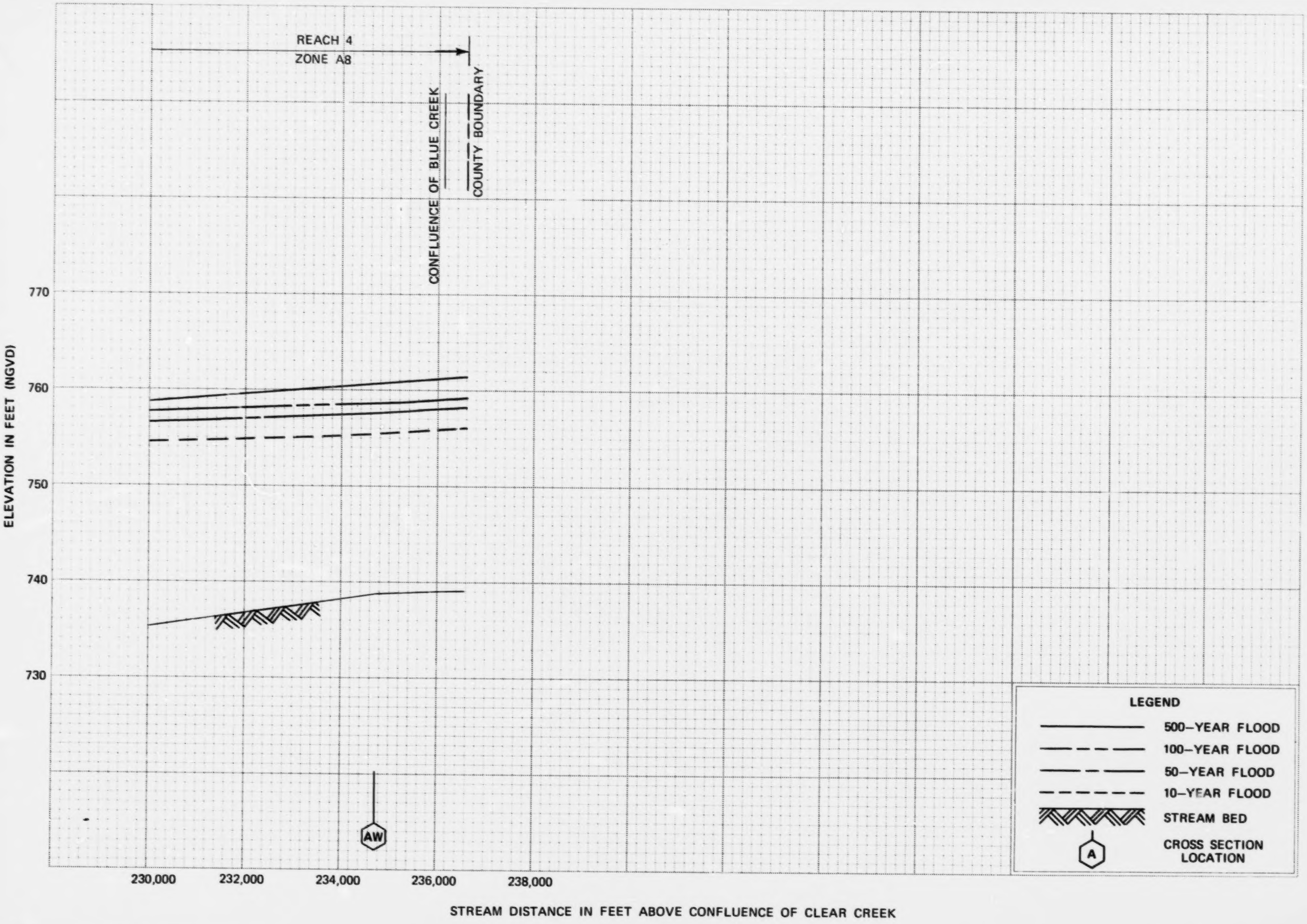


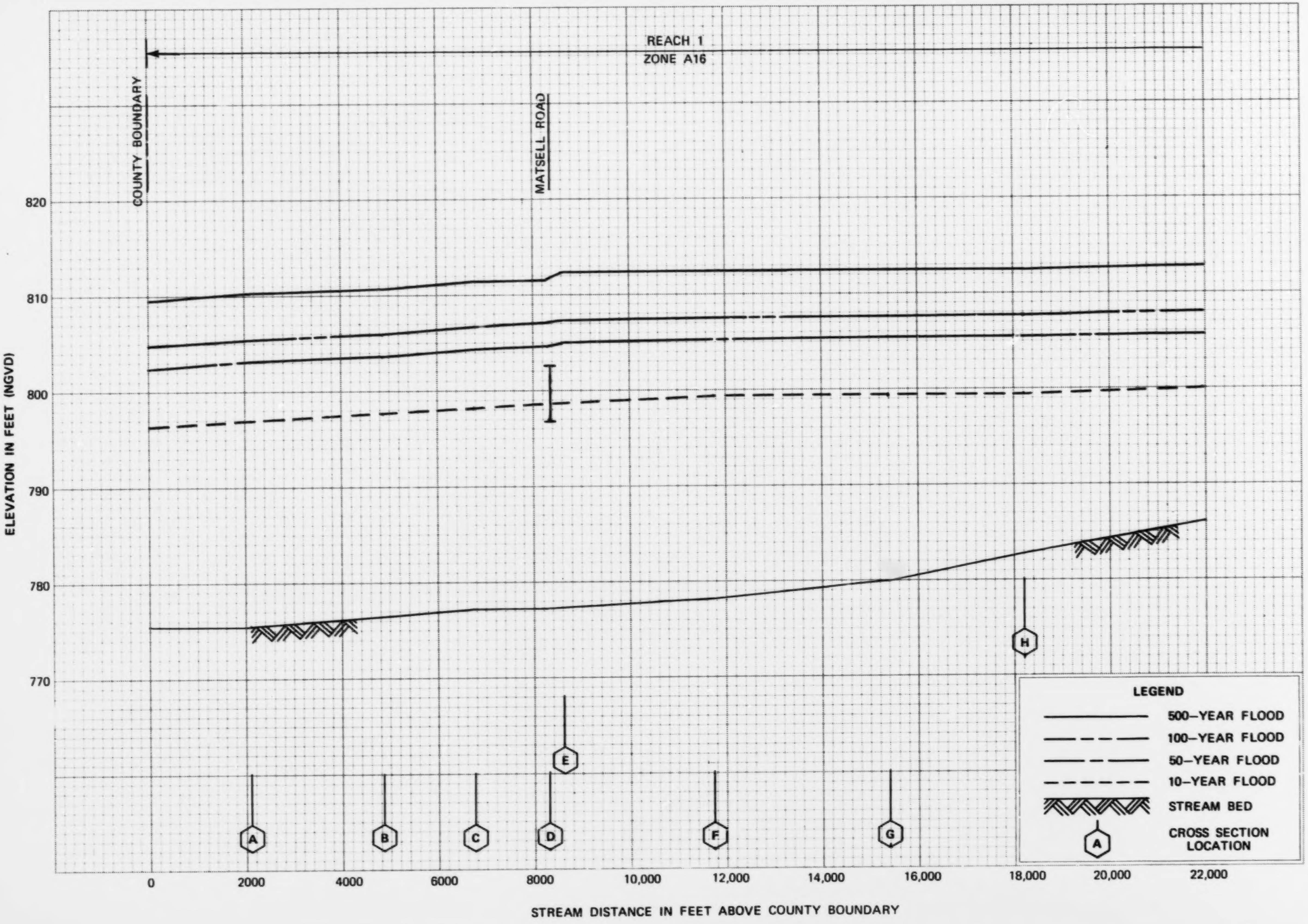
FLOOD PROFILES

CEDAR RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

10P



FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

11P

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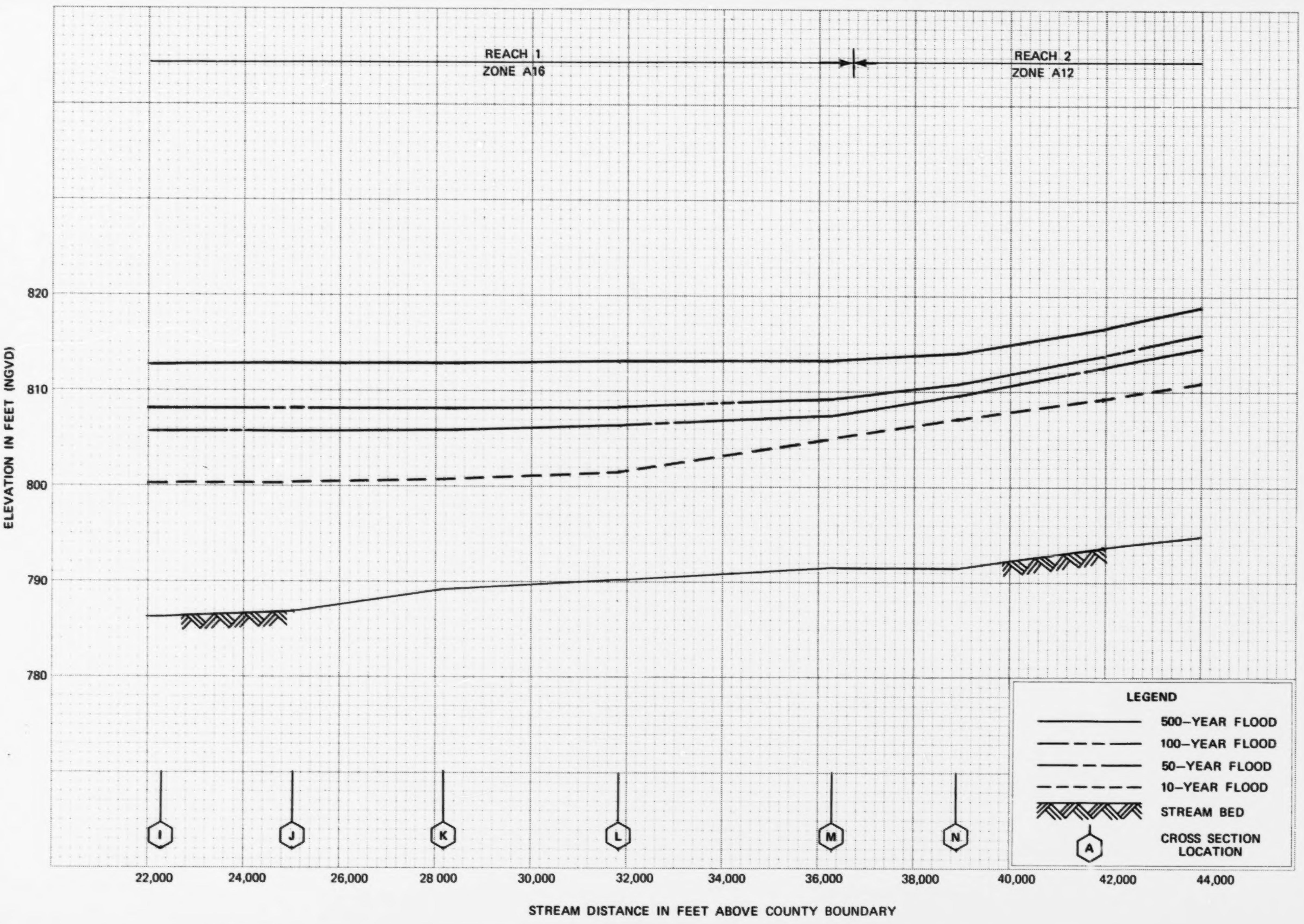


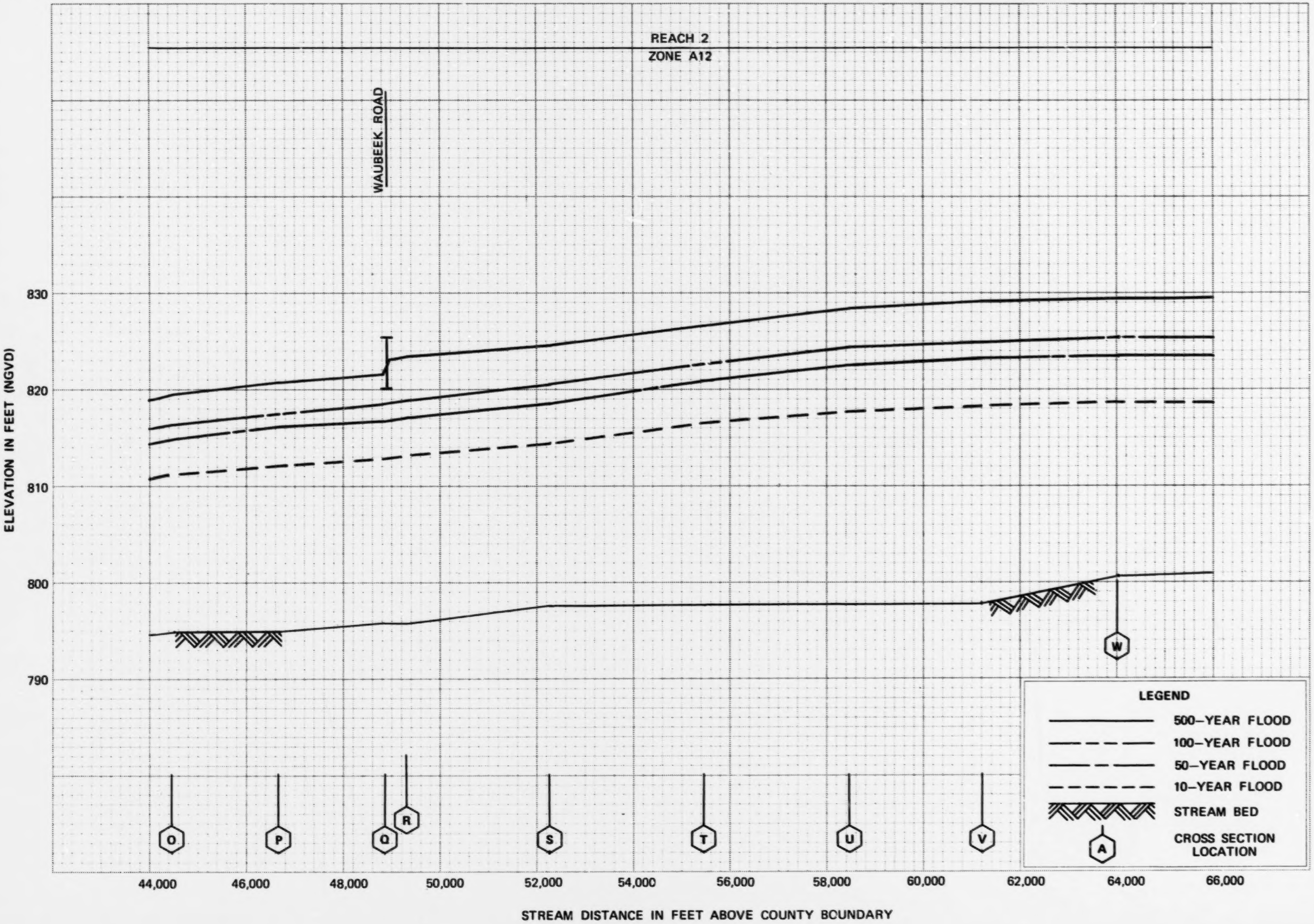
FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

12P



FLOOD PROFILES

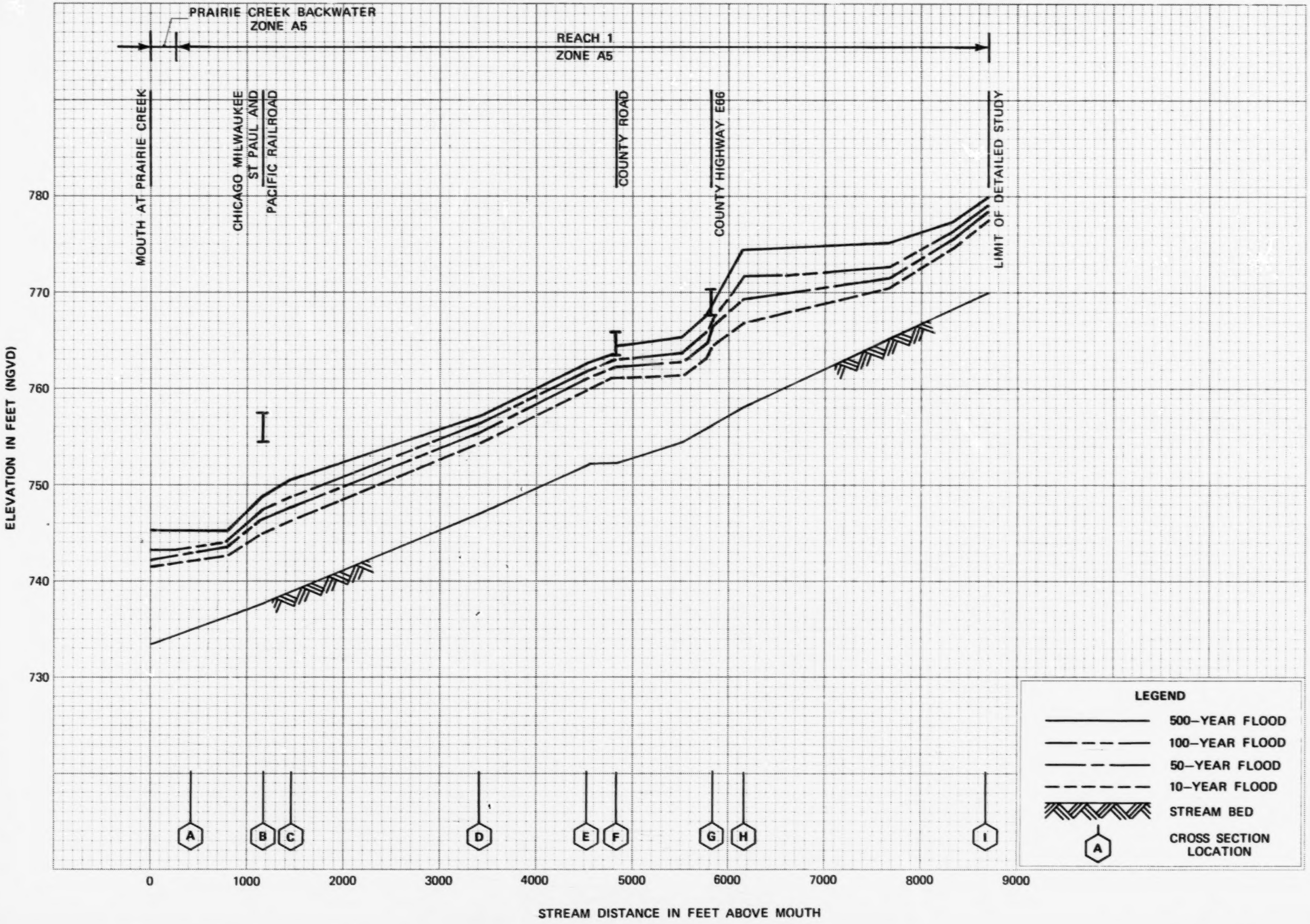
WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

13P



FLOOD PROFILES

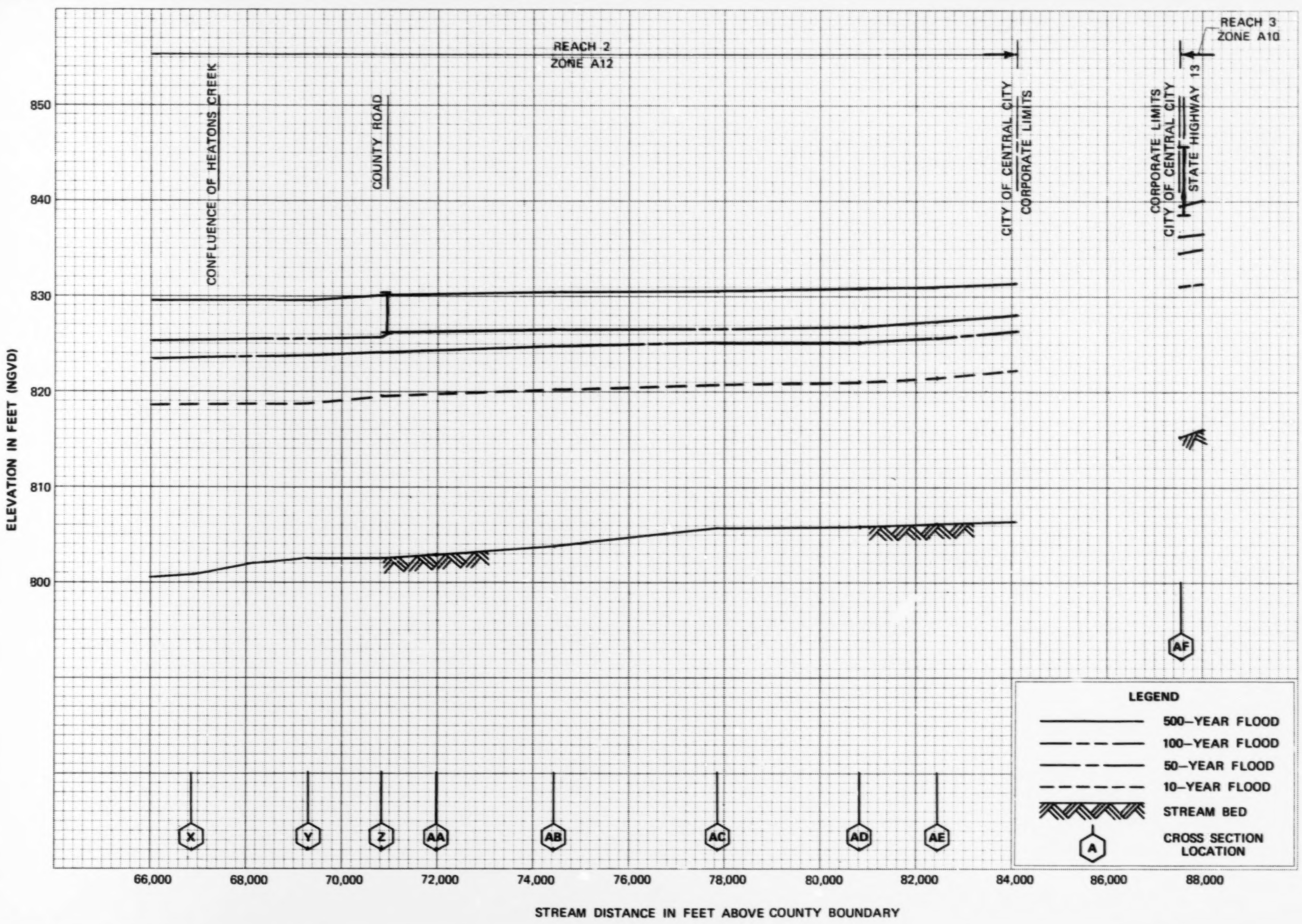
TISSEL HOLLOW

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

65

BEST DOCUMENT AVAILABLE



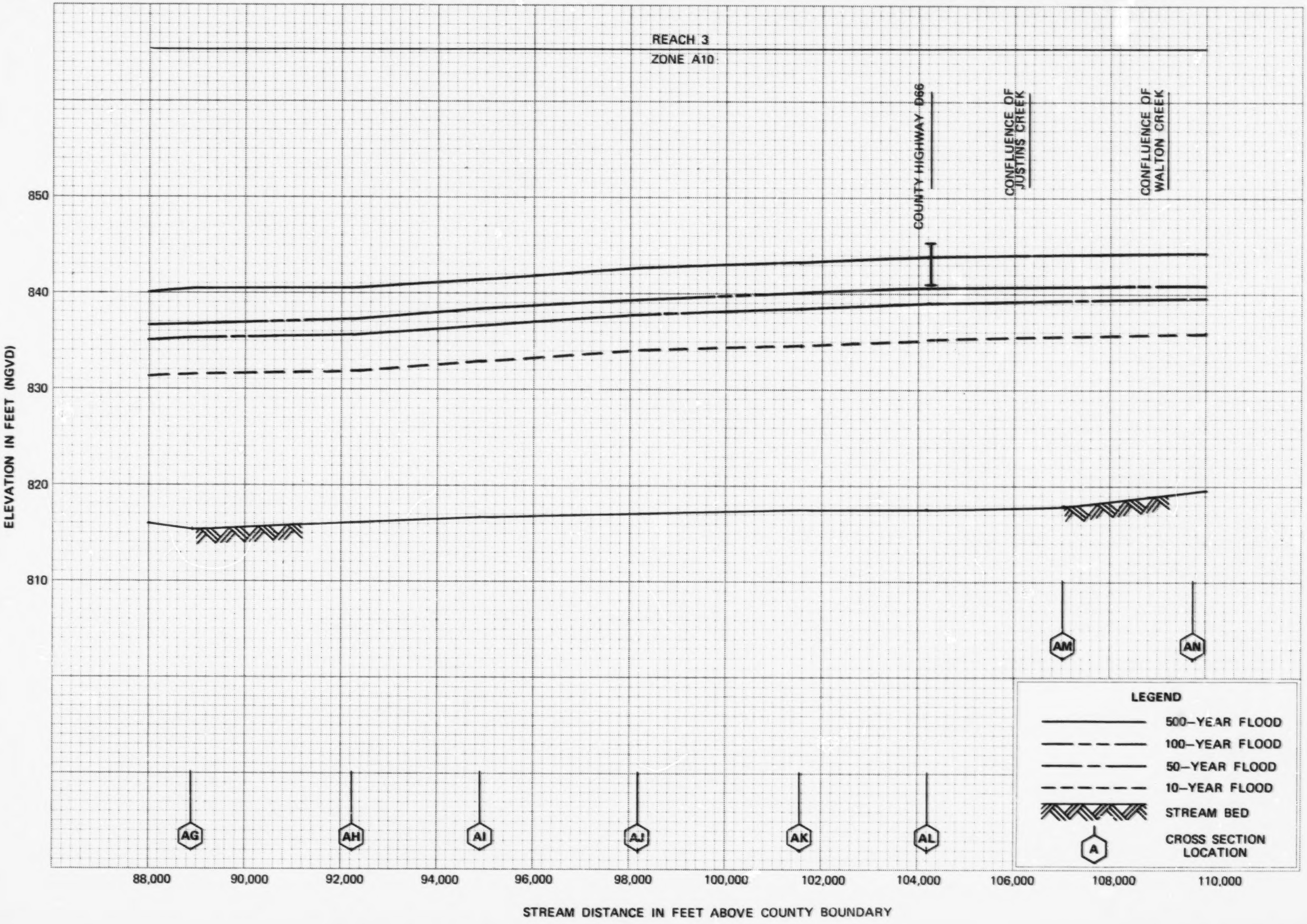
FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)



FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

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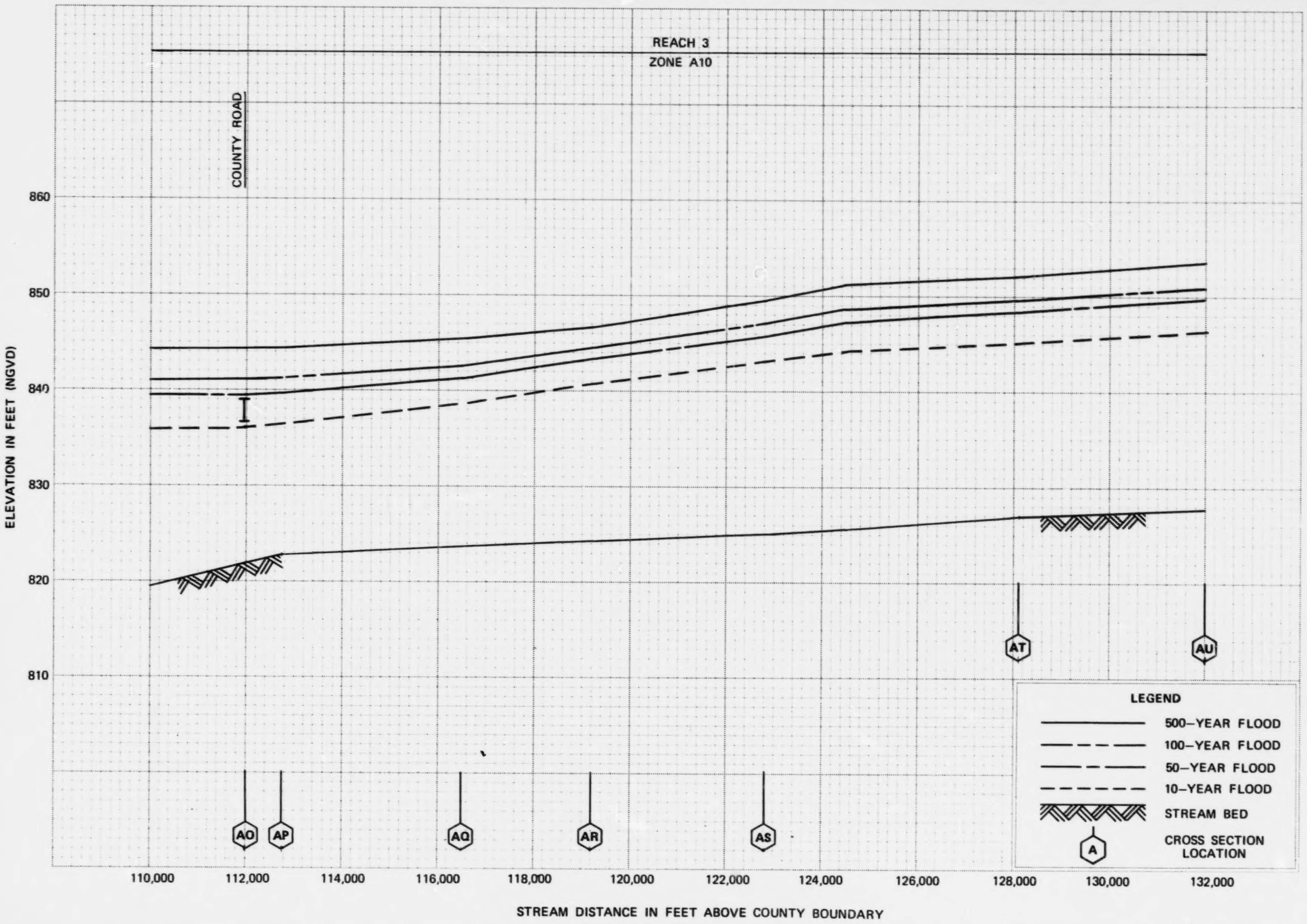


FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

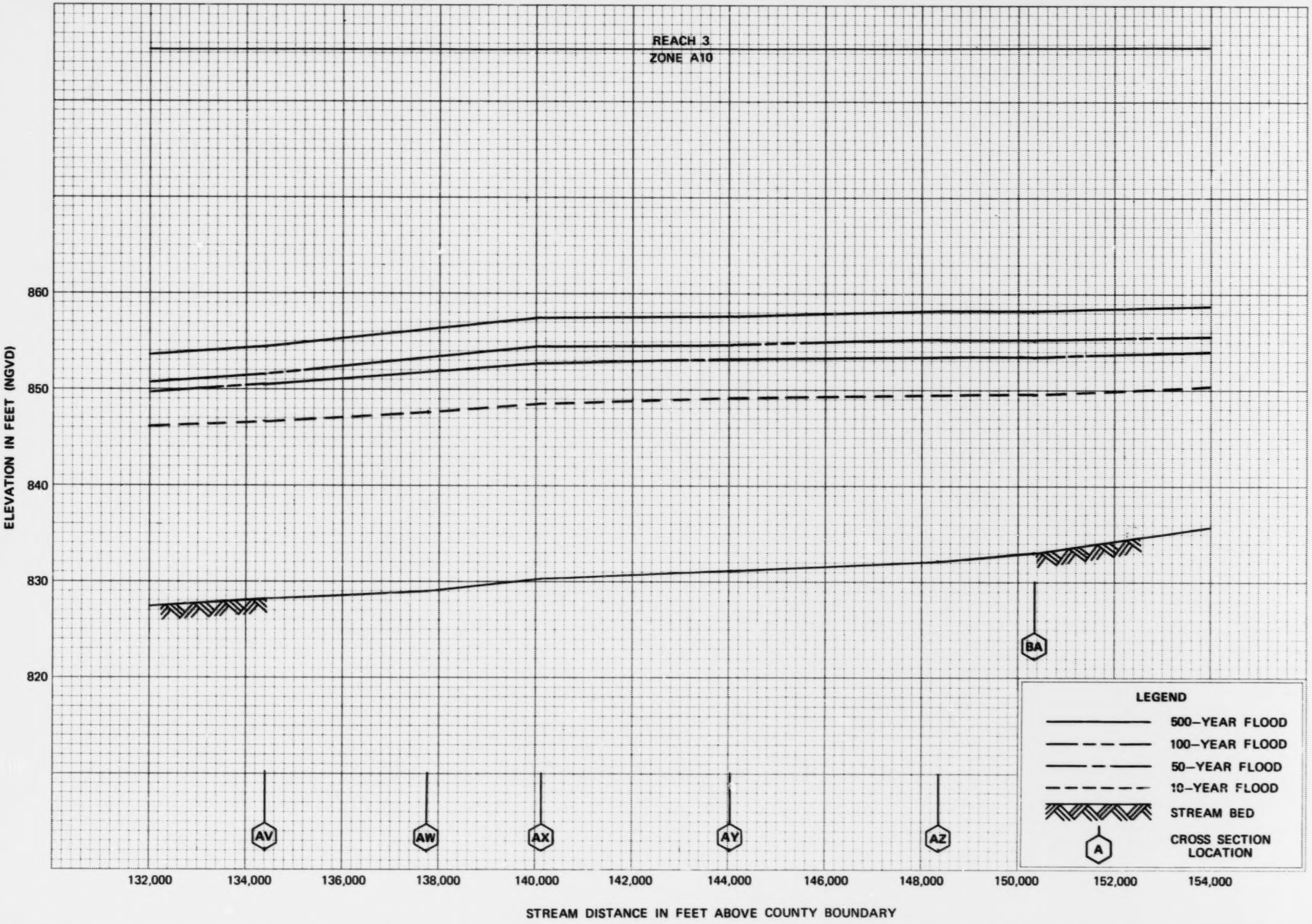
COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

16P

68

BEST DOCUMENT AVAILABLE



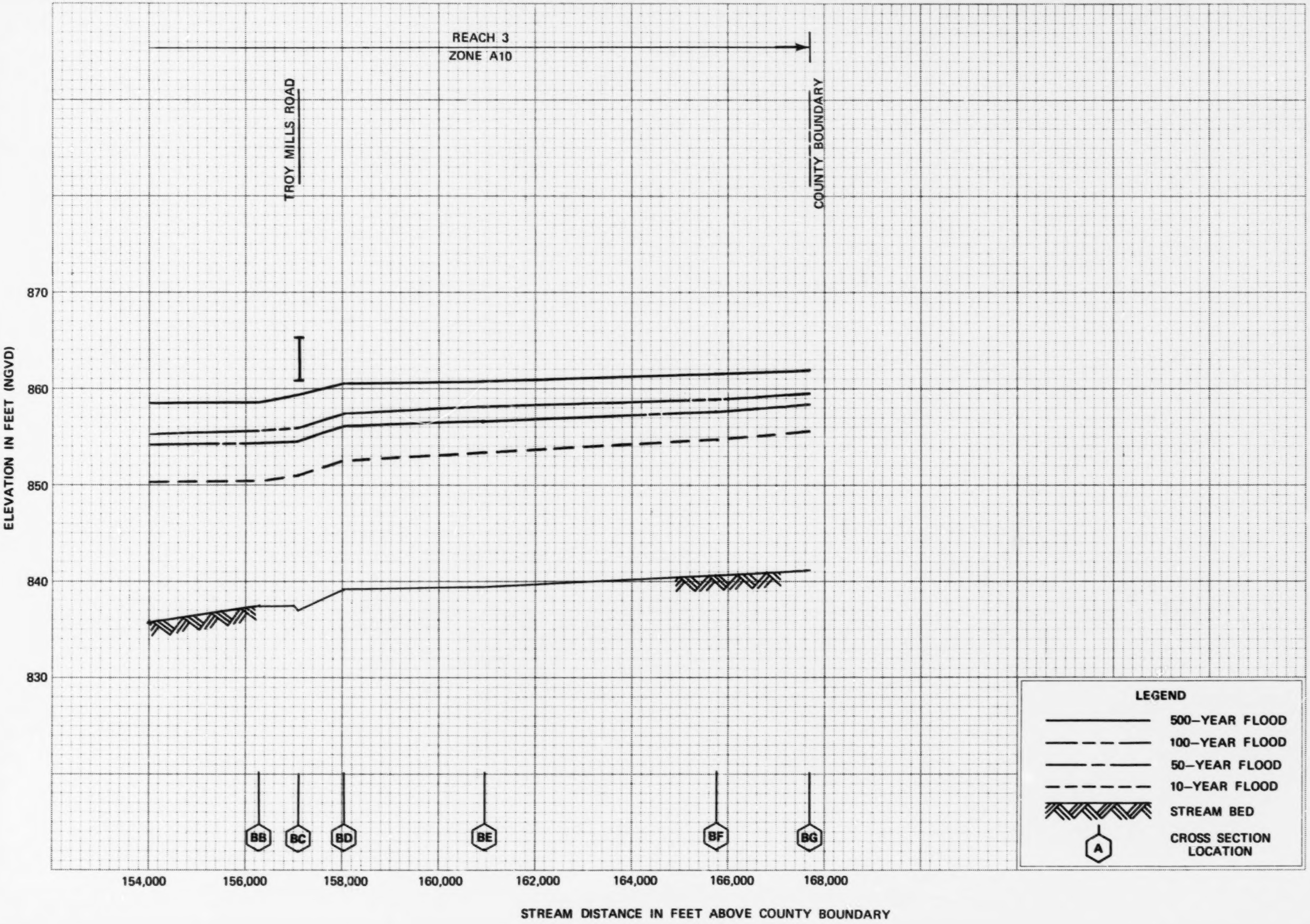
FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

17P



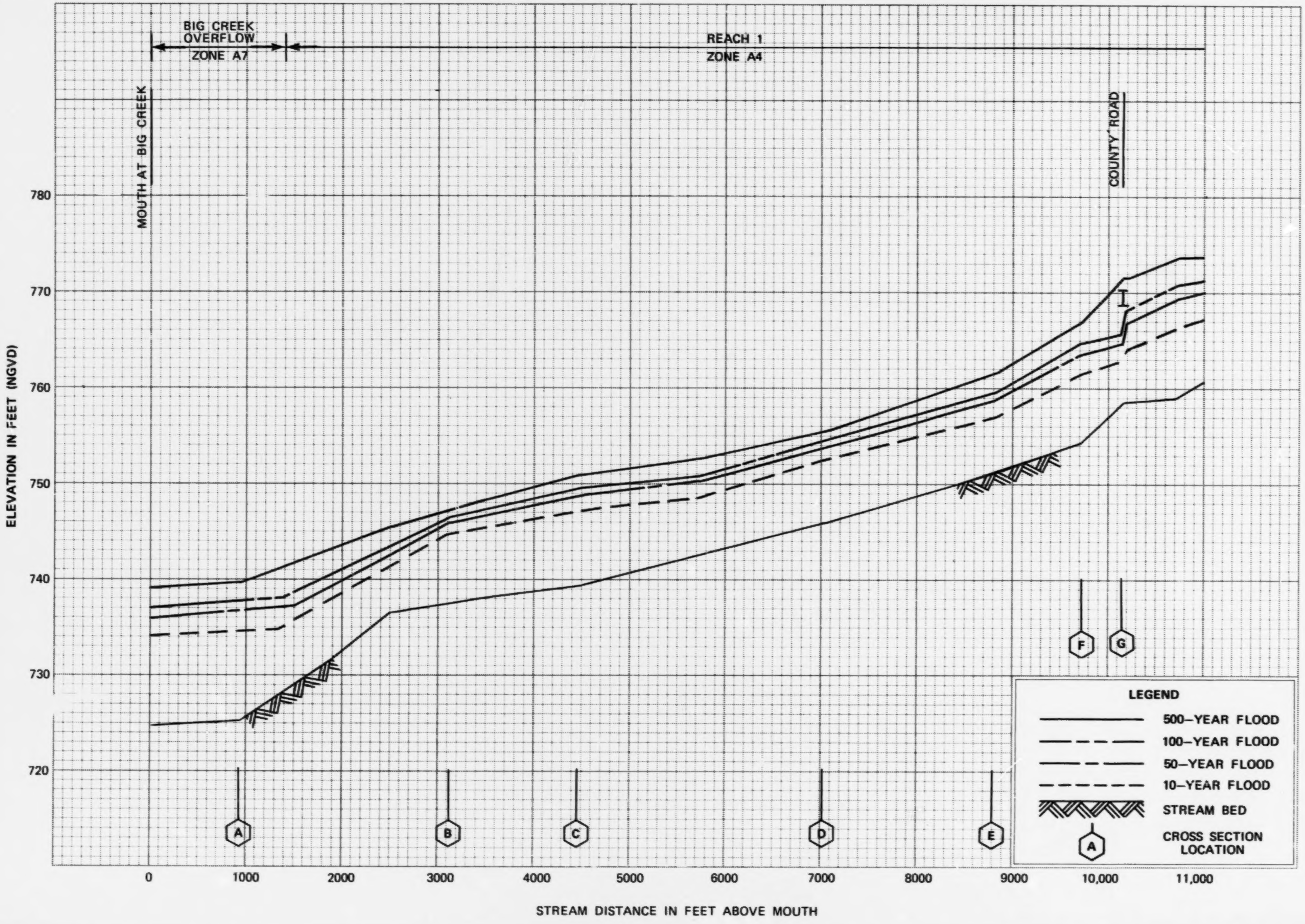
FLOOD PROFILES

WAPSIPINICON RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

18P

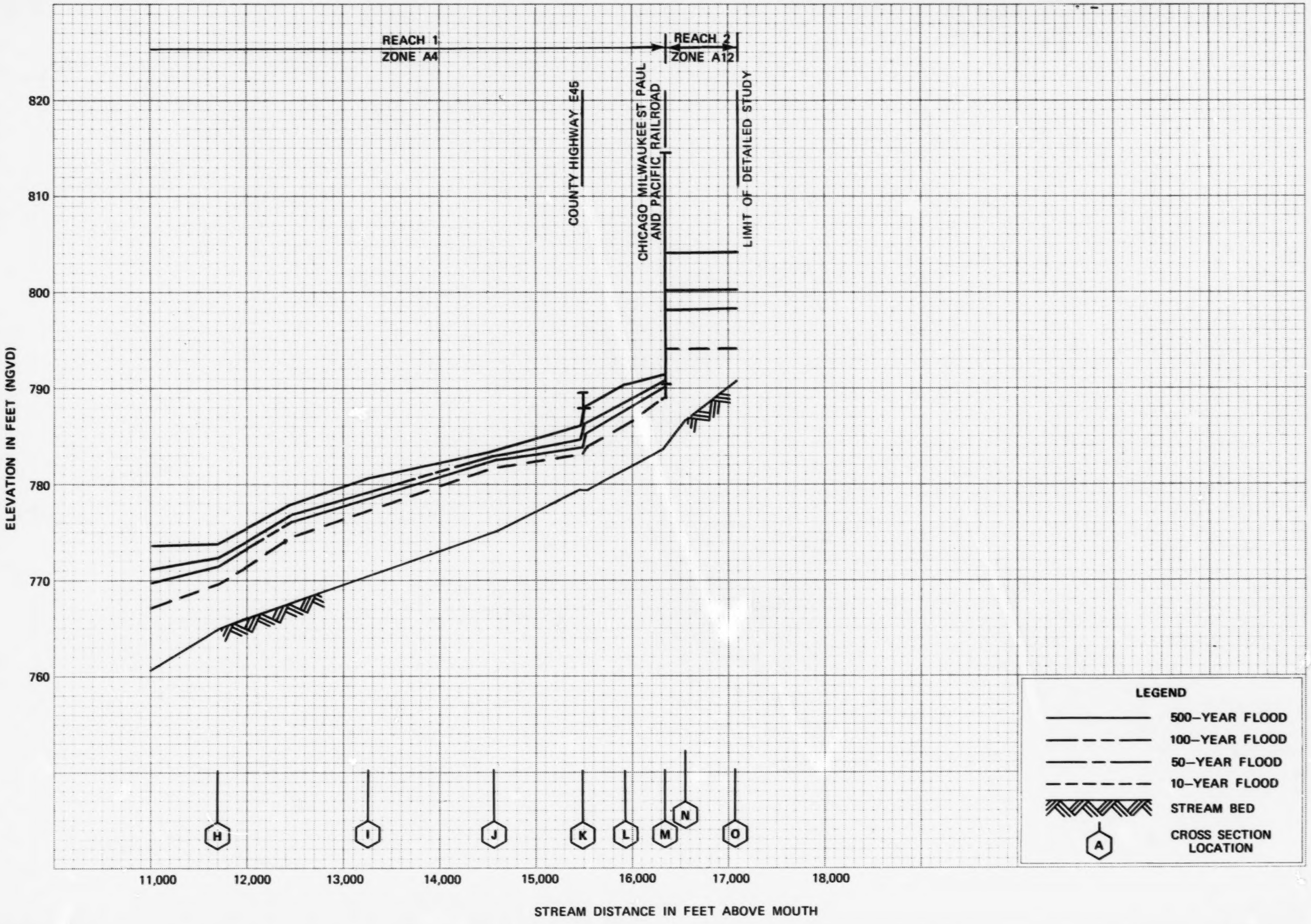


FLOOD PROFILES

MARTINS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



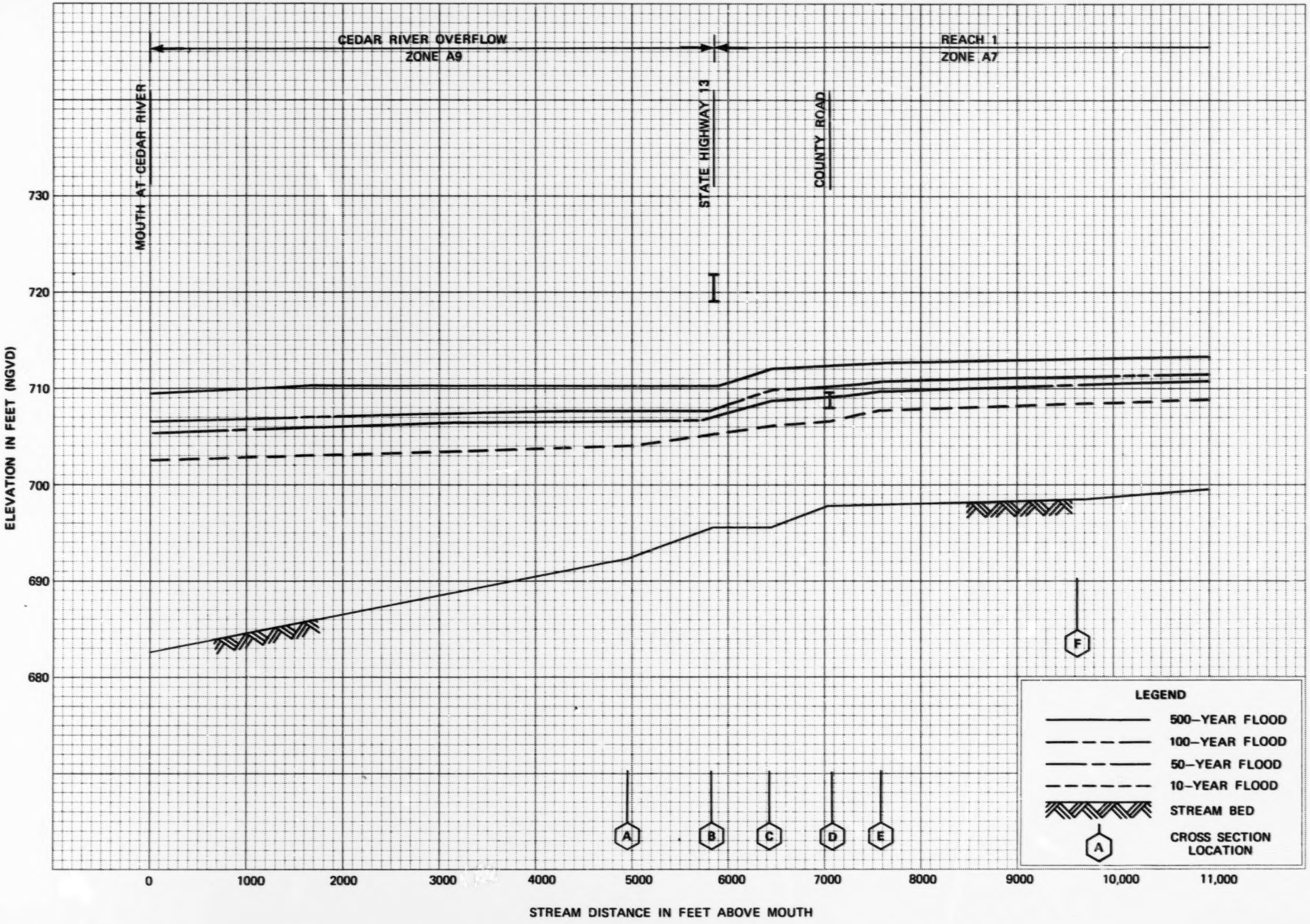
FLOOD PROFILES

MARTINS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

20P



FLOOD PROFILES

BIG CREEK

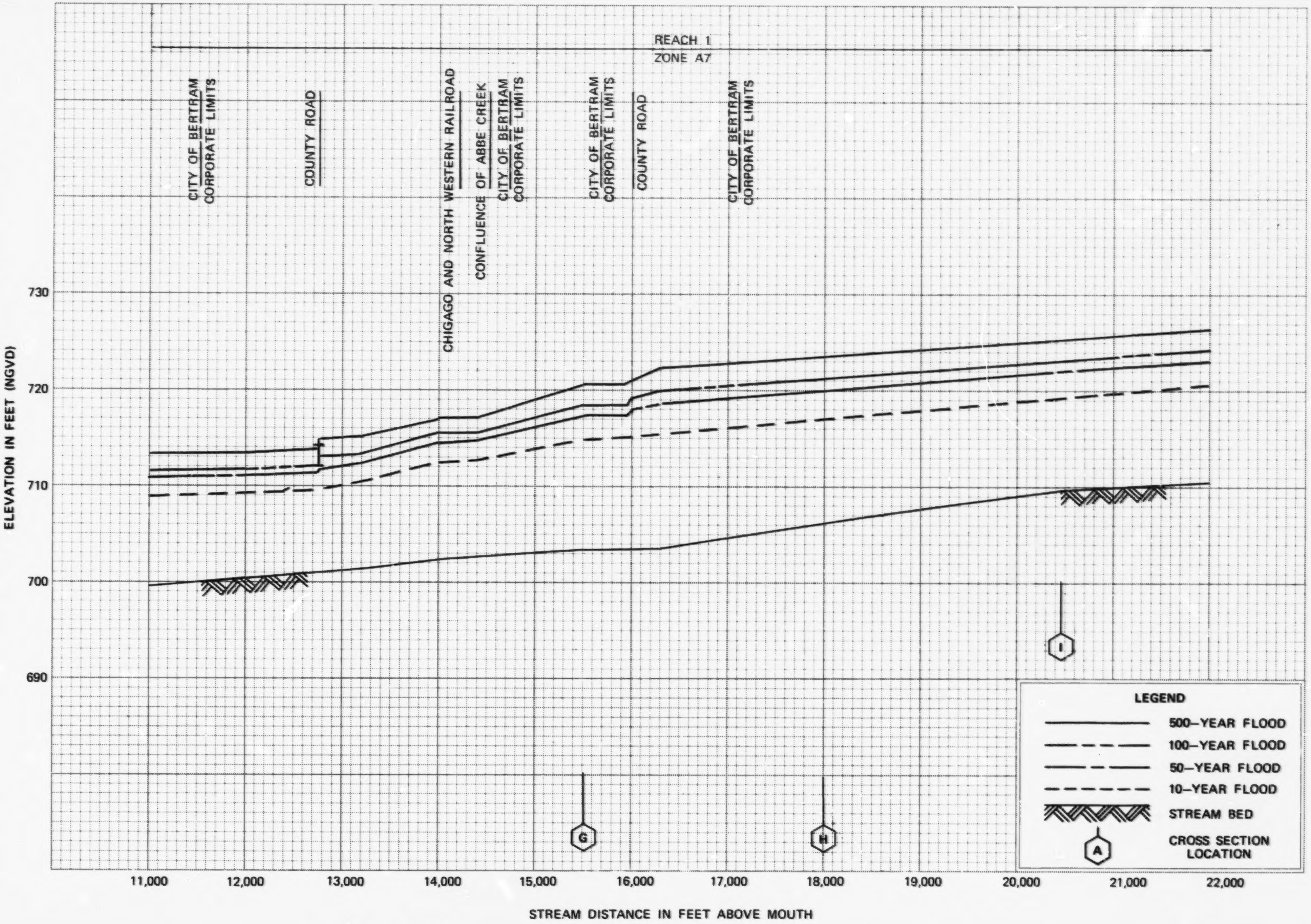
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

21P

73

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

BIG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

22P

74

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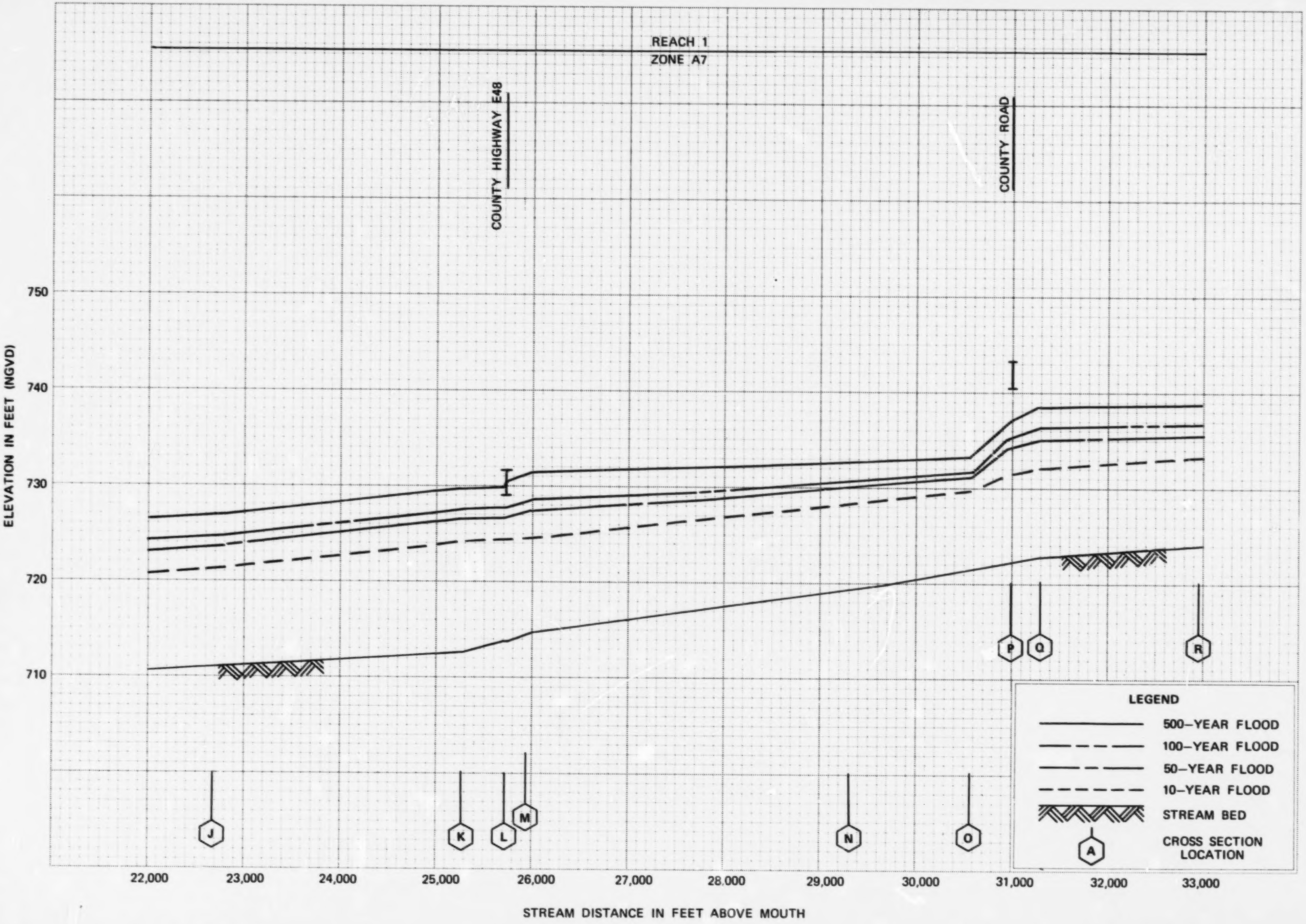


FLOOD PROFILES

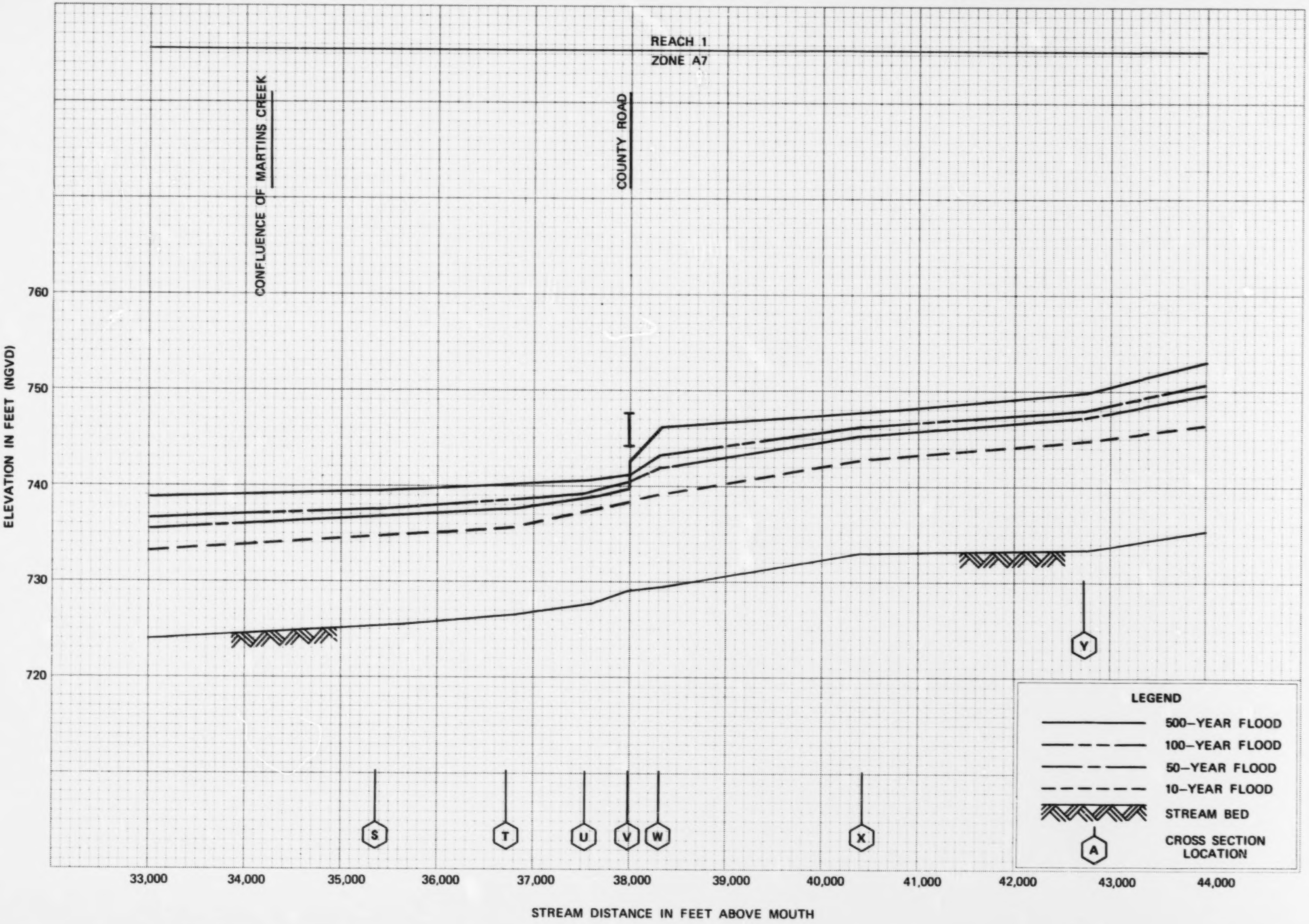
BIG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

23P



FLOOD PROFILES

BIG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

24P

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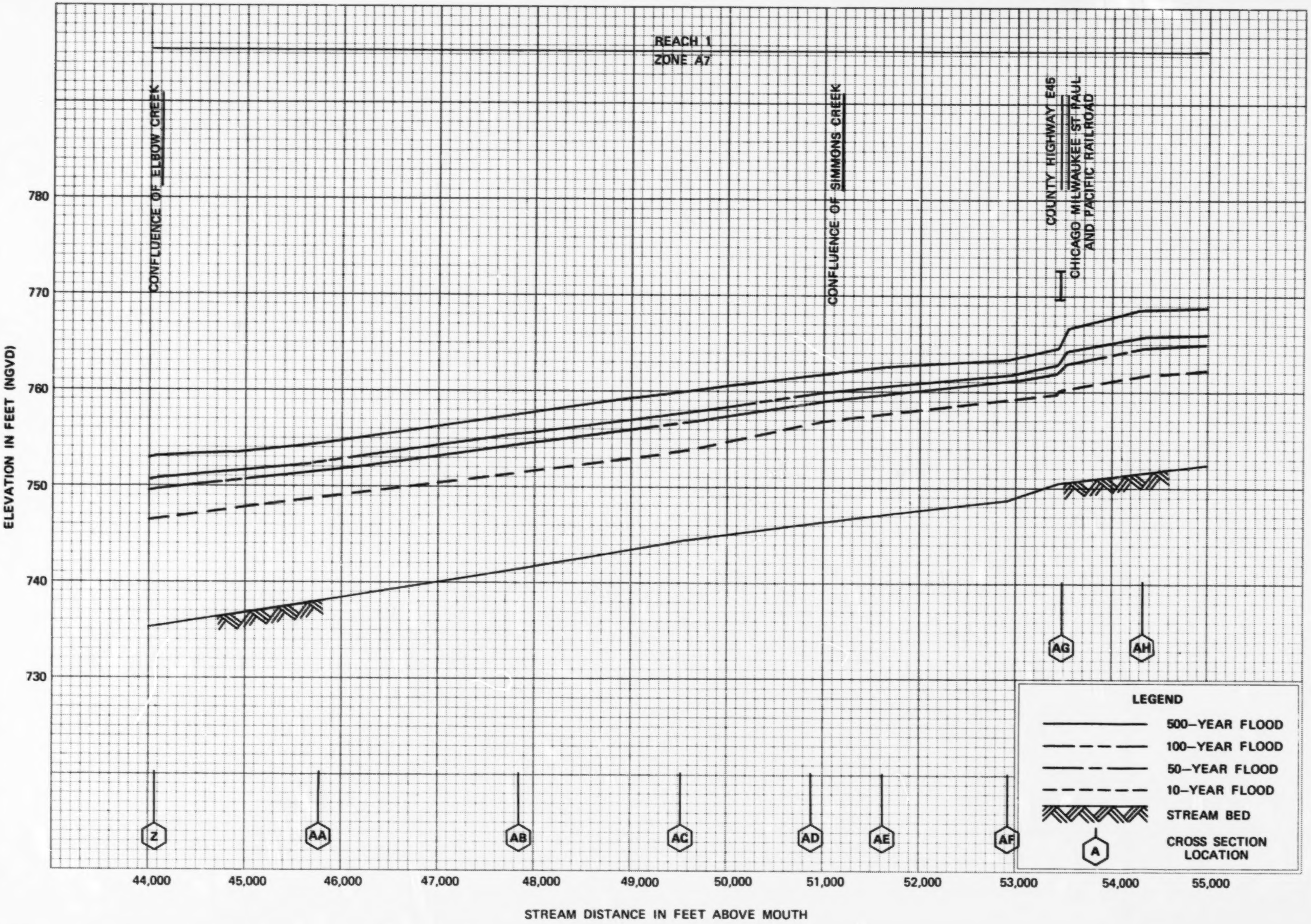


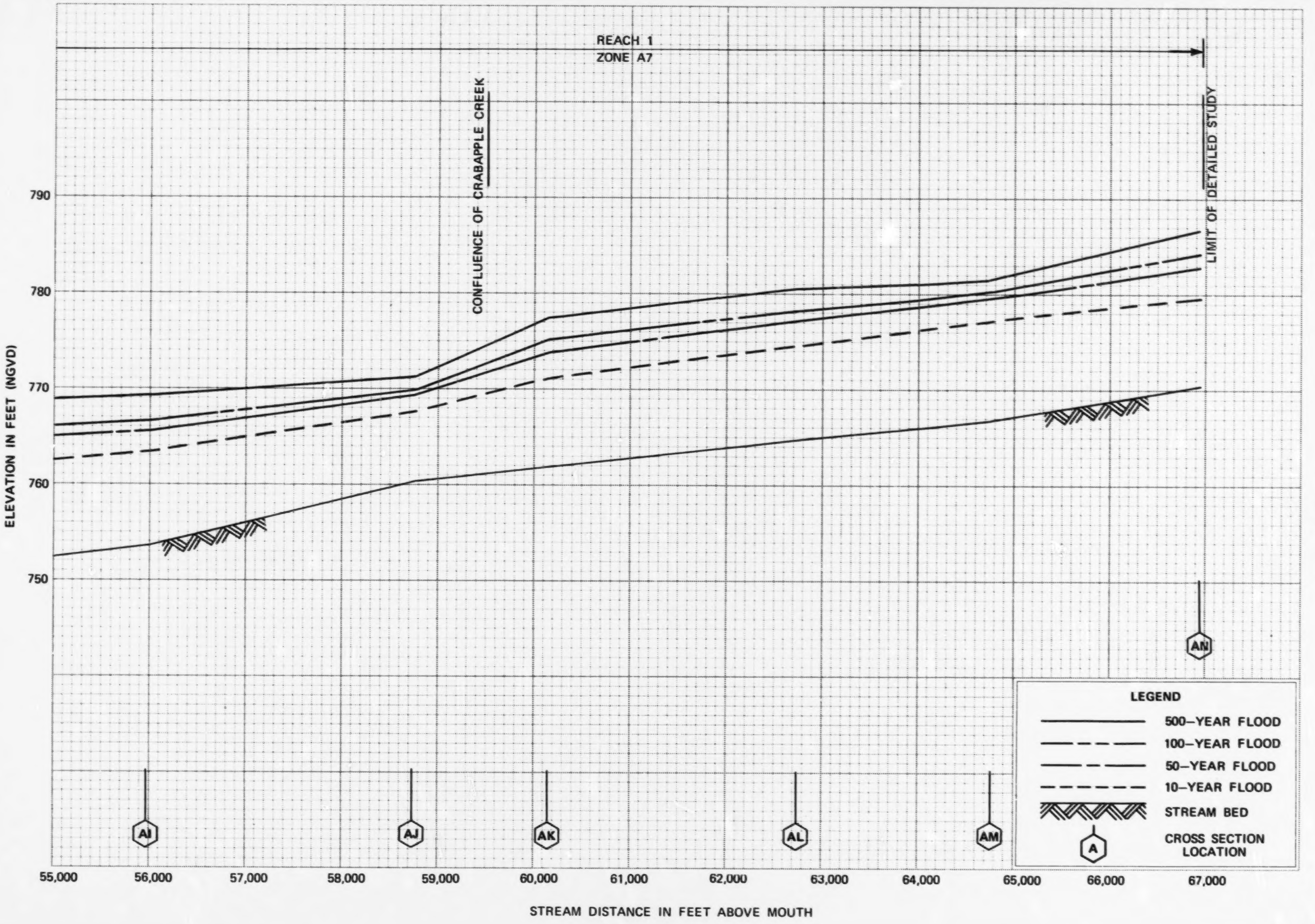
FLOOD PROFILES

BIG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

25P



FLOOD PROFILES

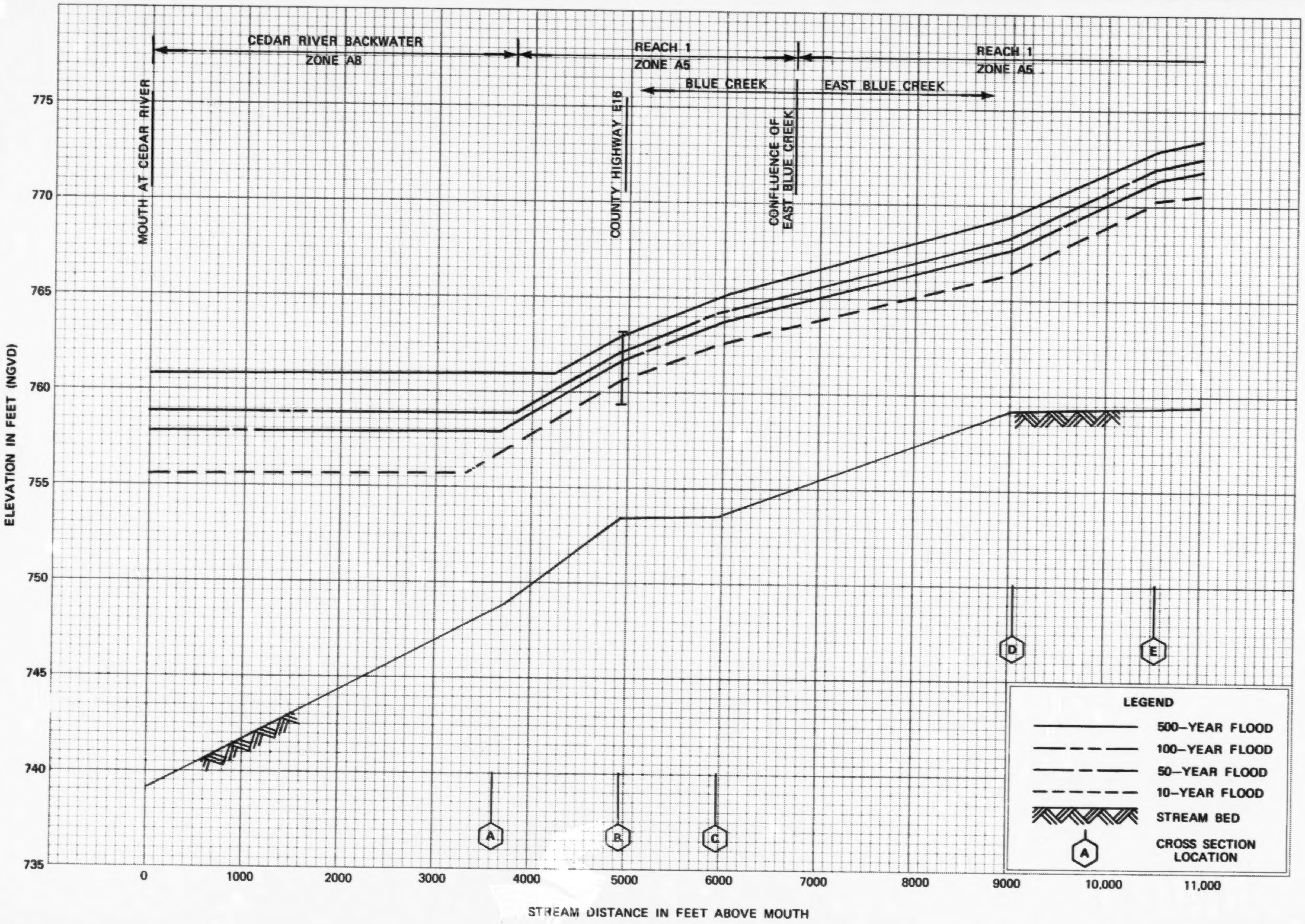
BIG CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

26P

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

BLUE CREEK-EAST BLUE CREEK

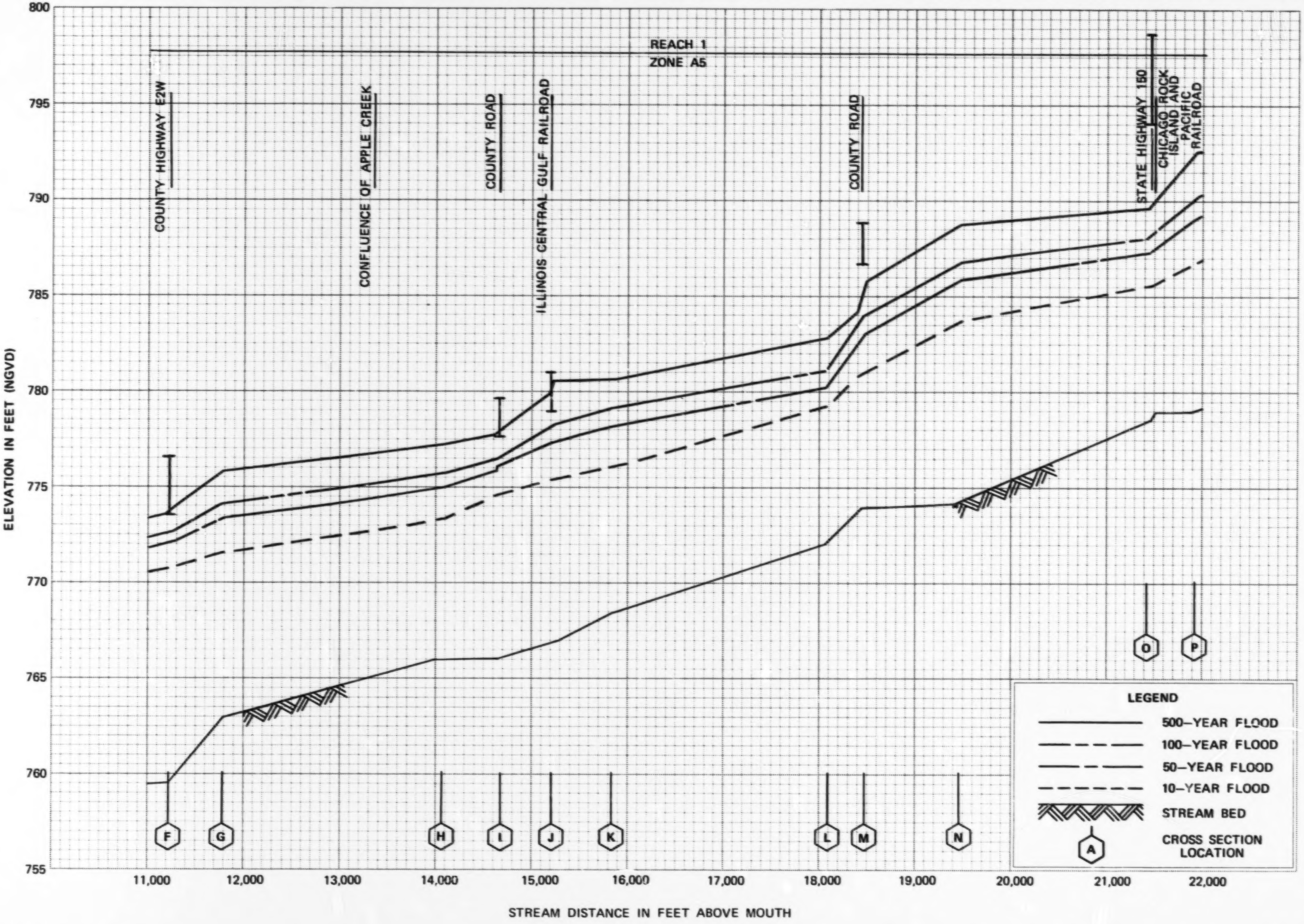
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

27P

79

BEST DOCUMENT AVAILABLE

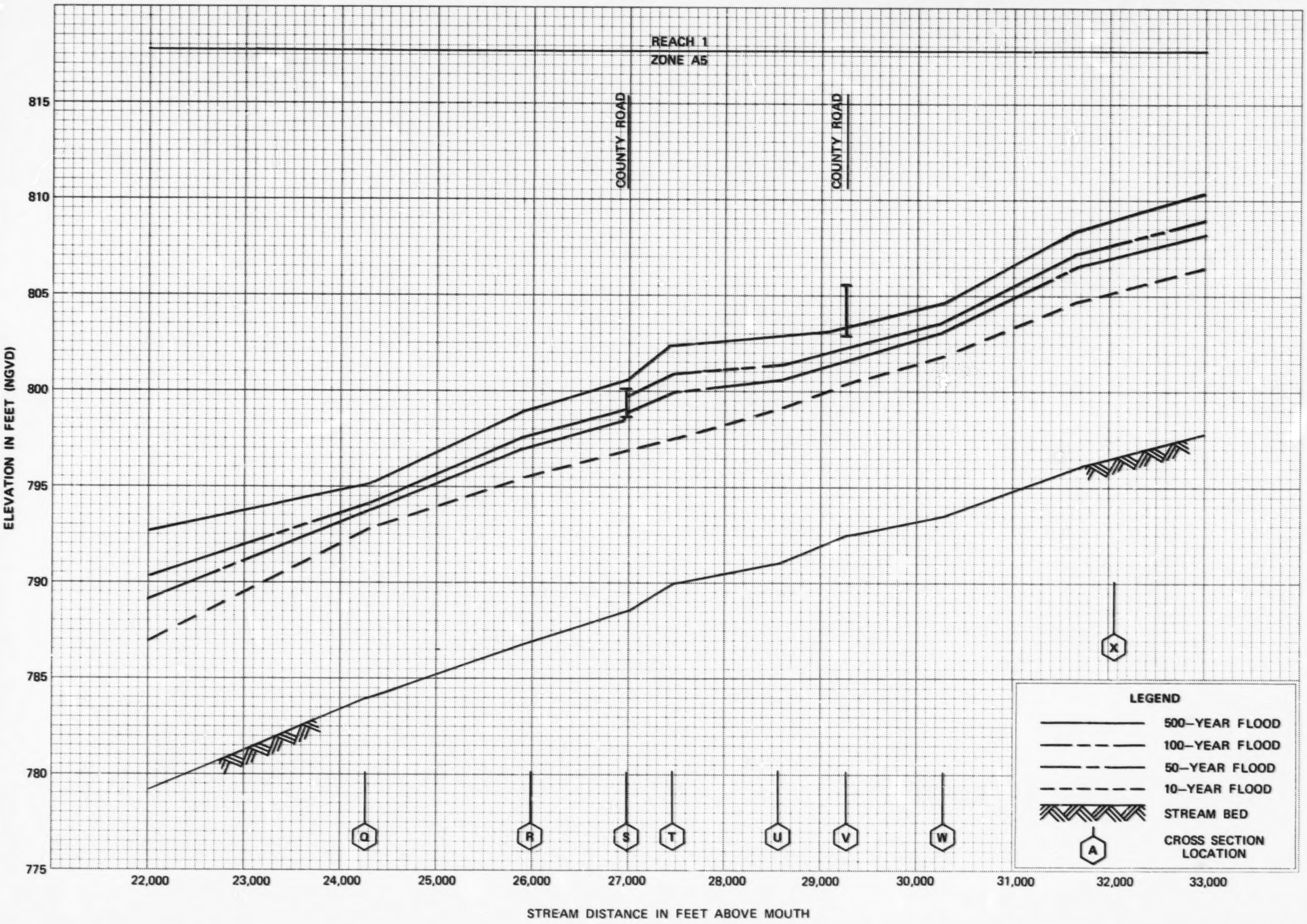


FLOOD PROFILES

EAST BLUE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

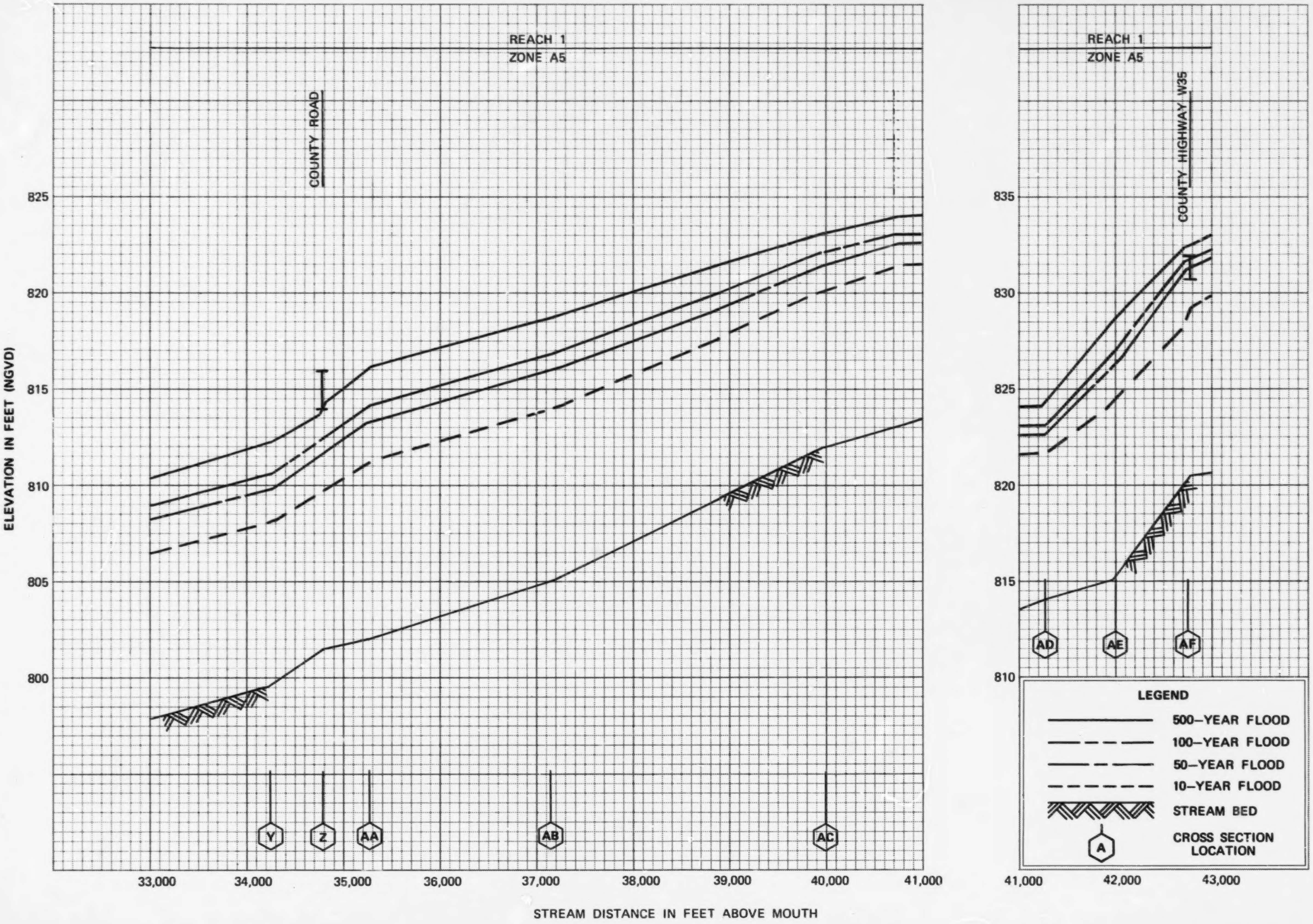


FLOOD PROFILES

EAST BLUE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



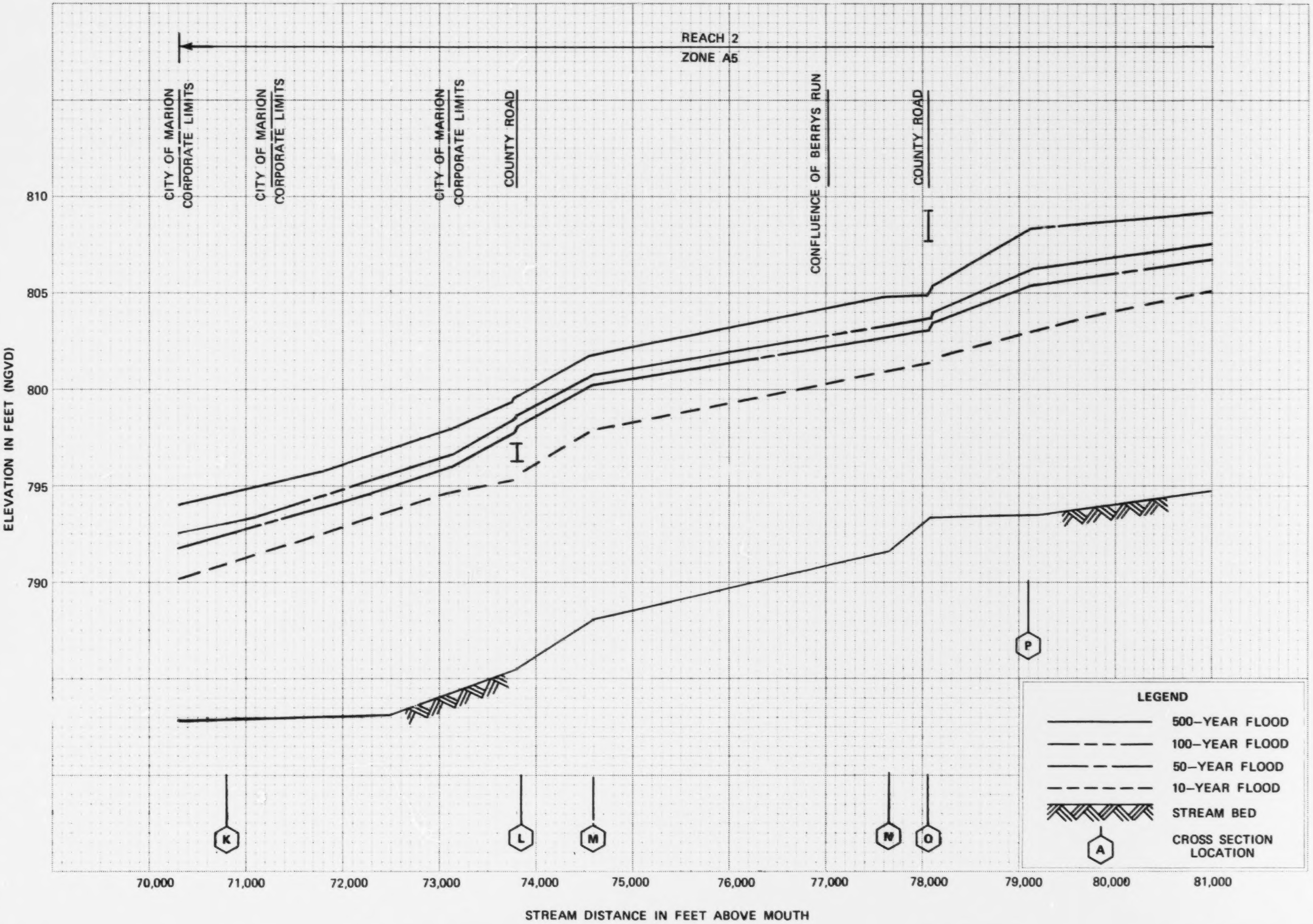
FLOOD PROFILES

EAST BLUE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

30P

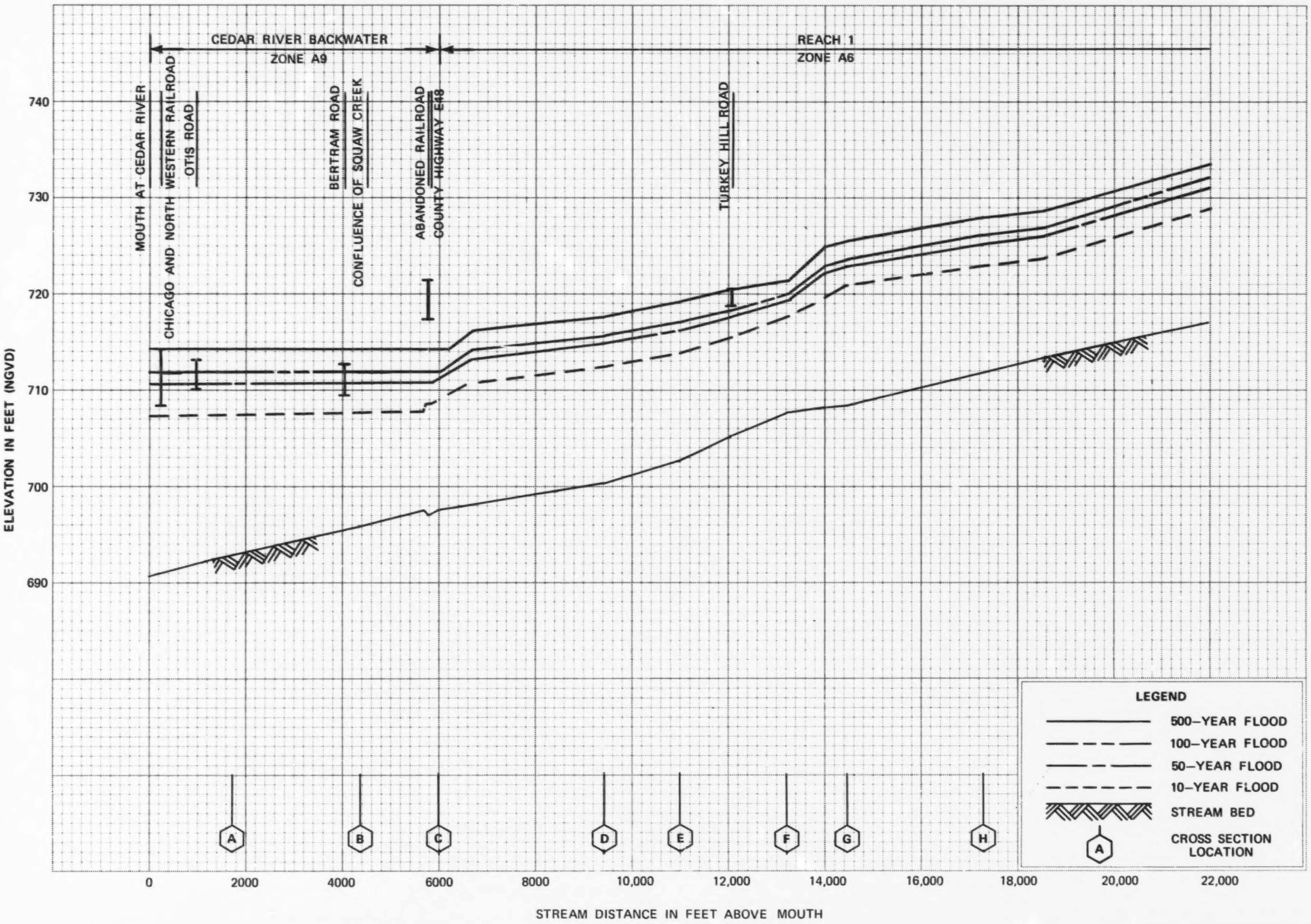


FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

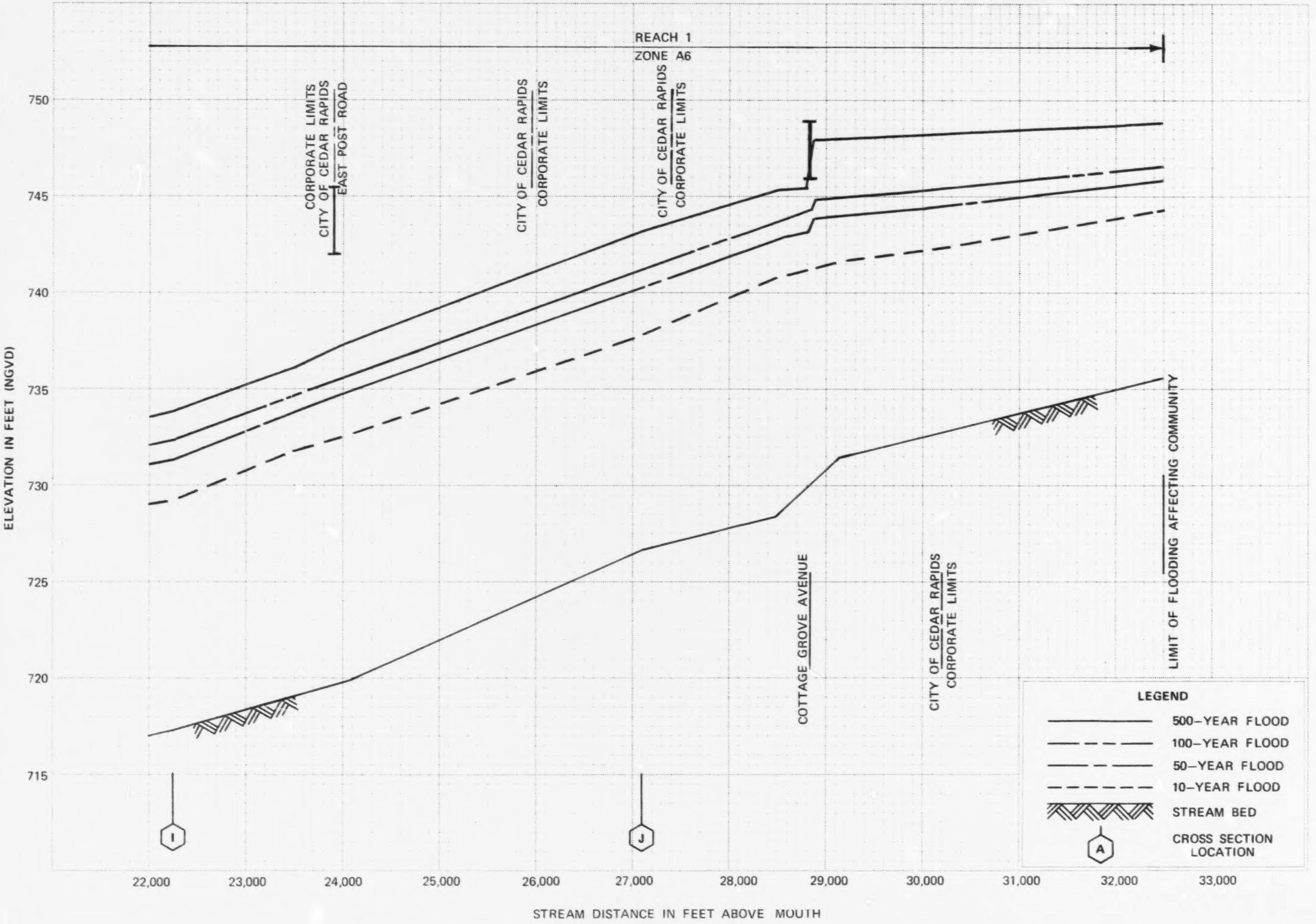
COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

32P

84

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

85

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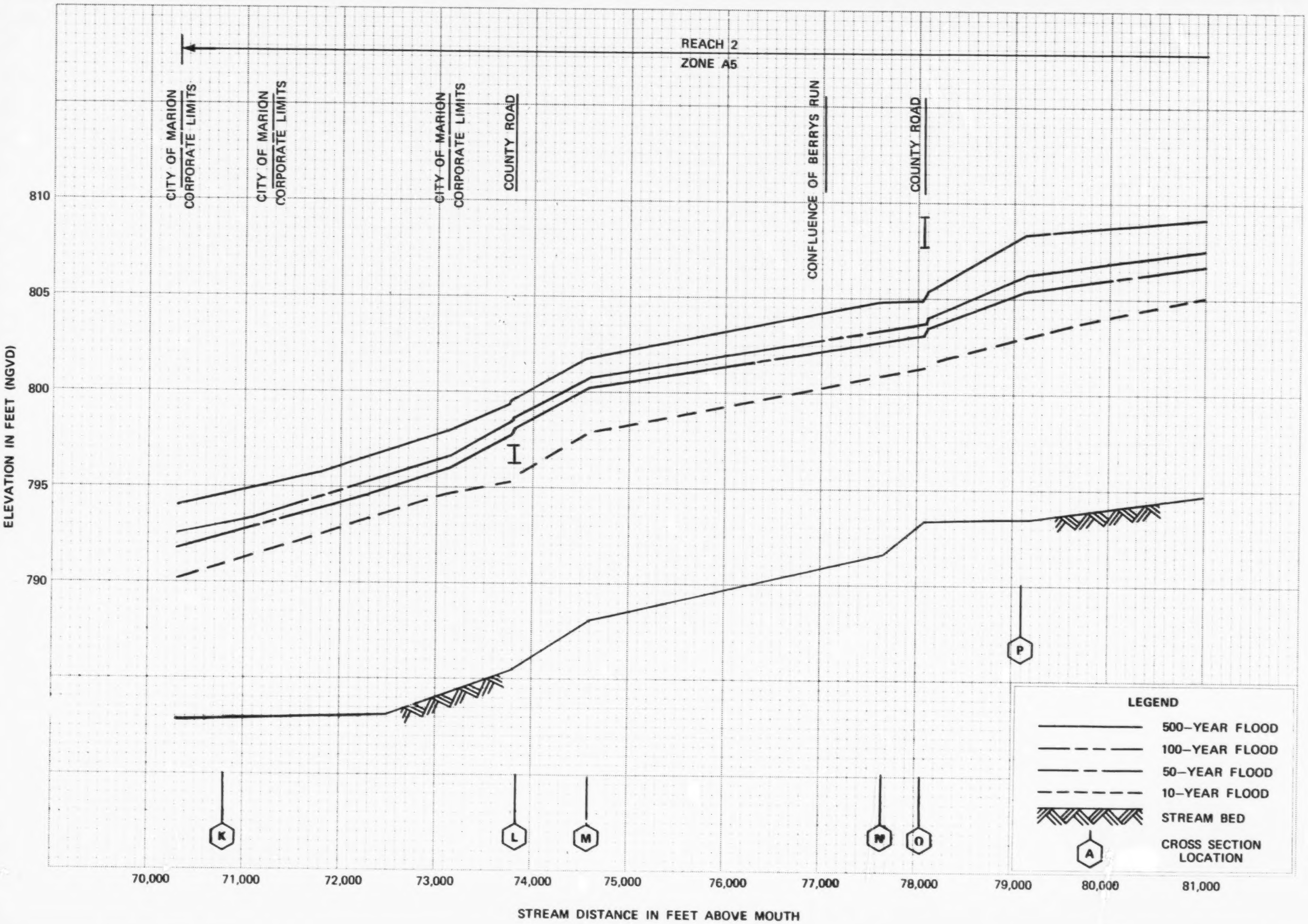
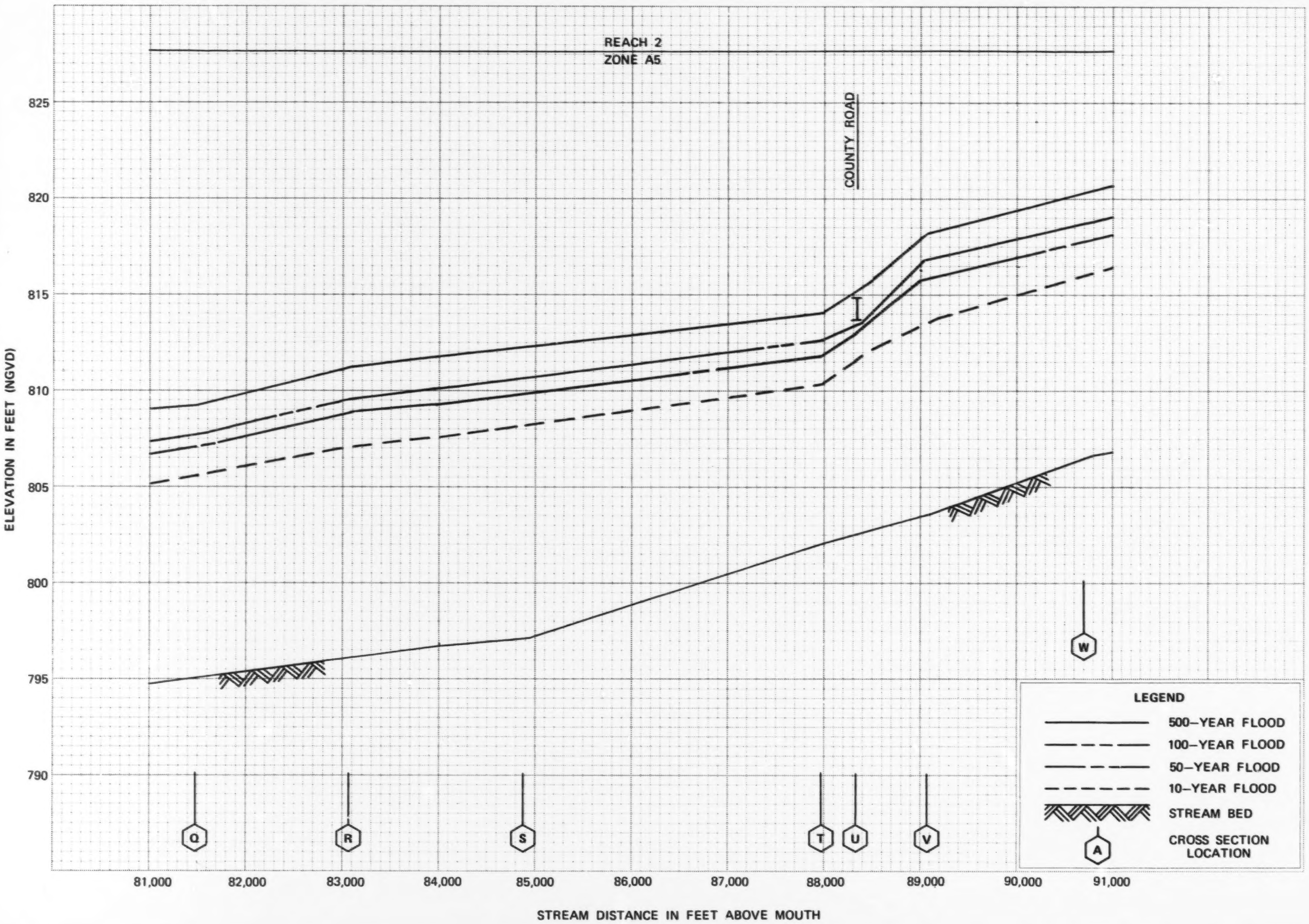


FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

35P

87

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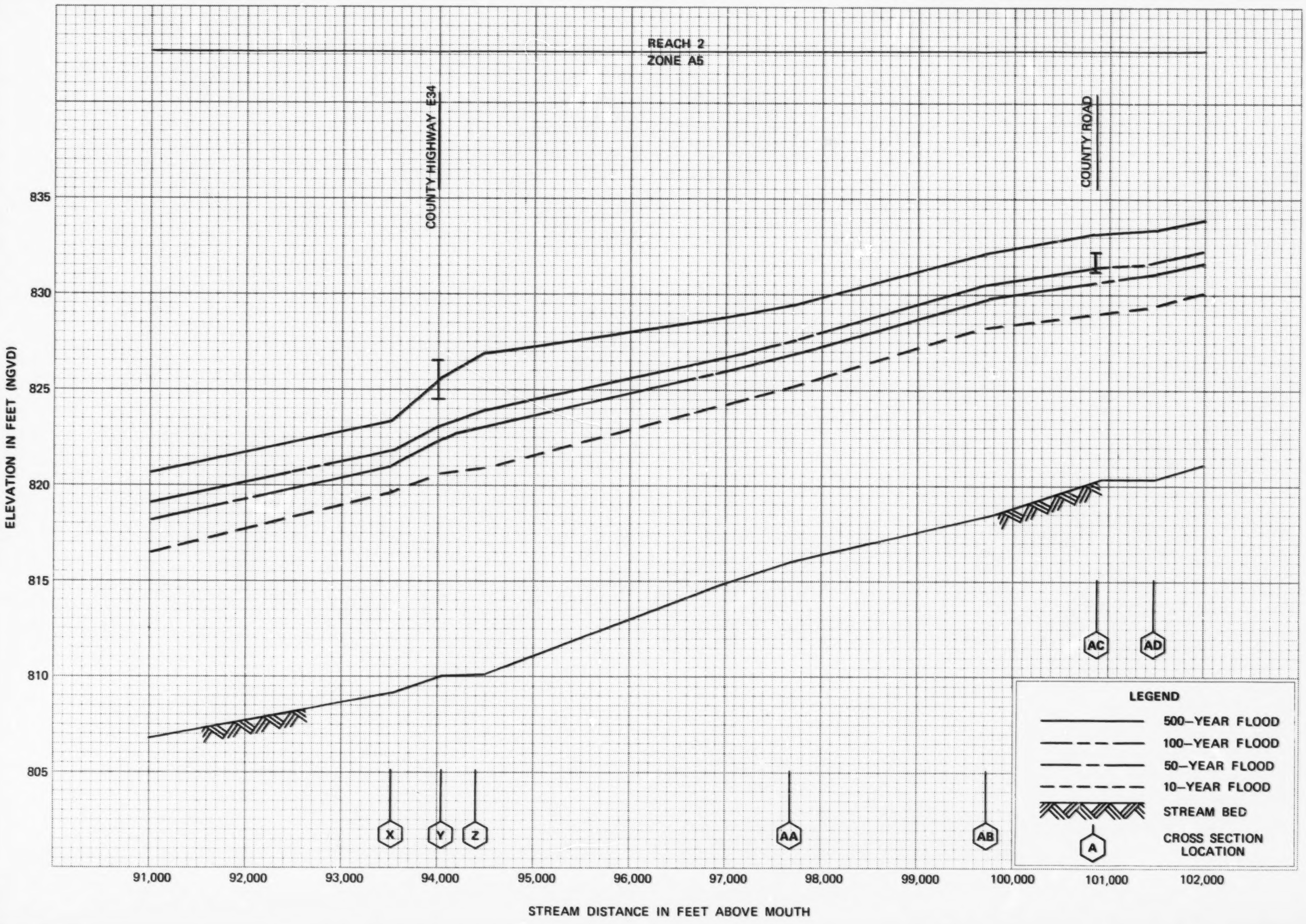

FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

36P

88

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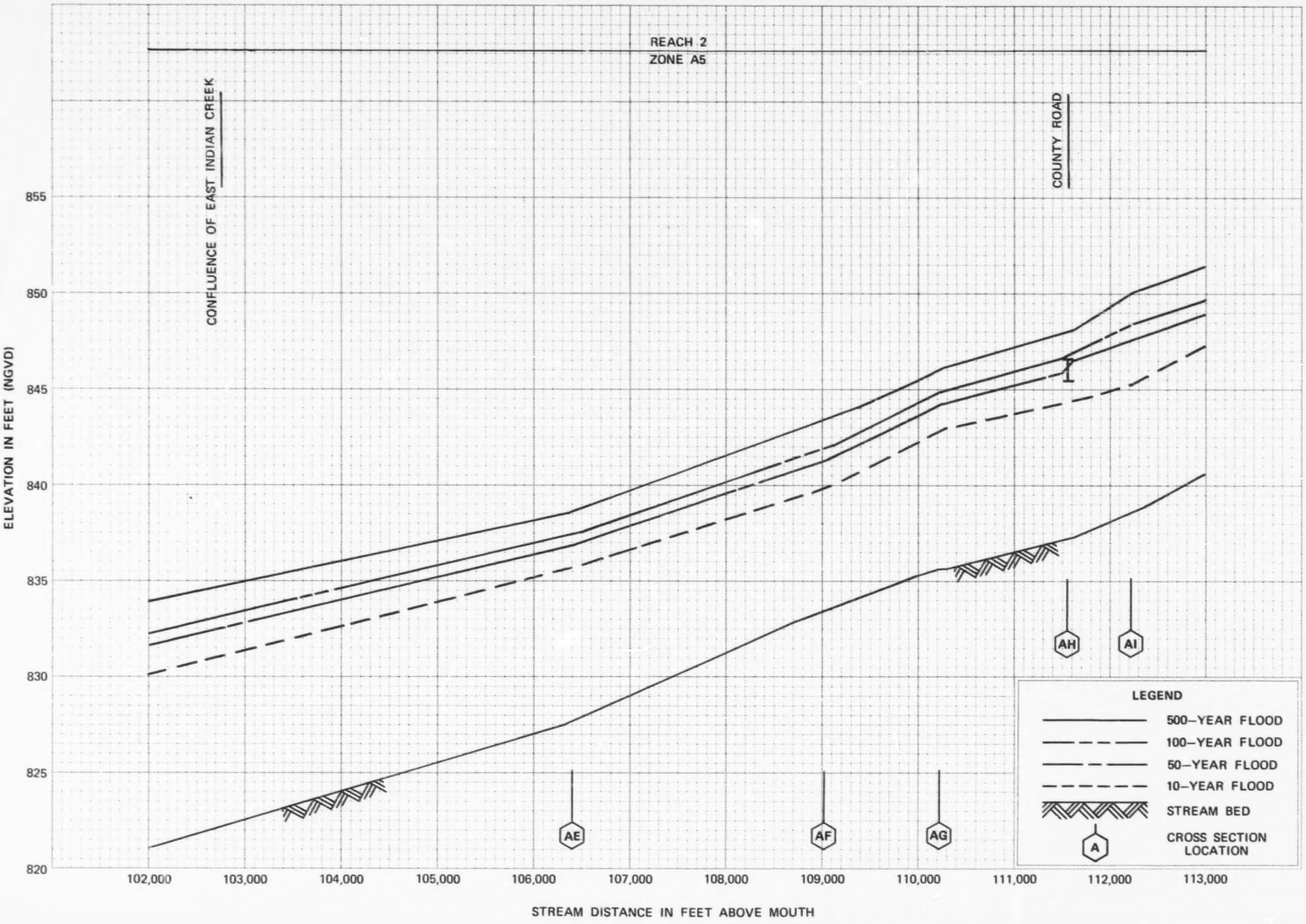

FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

37P

89

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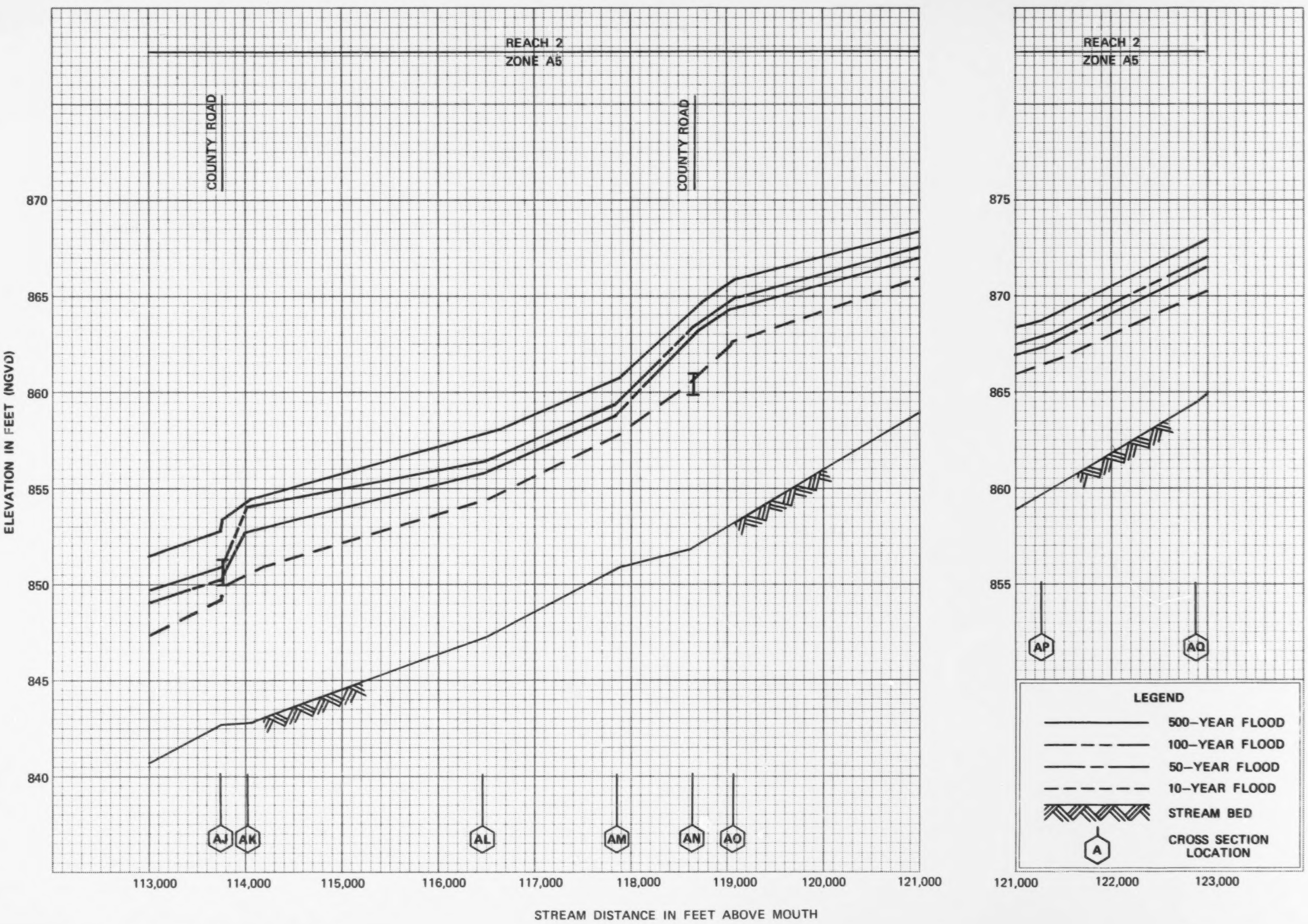

FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

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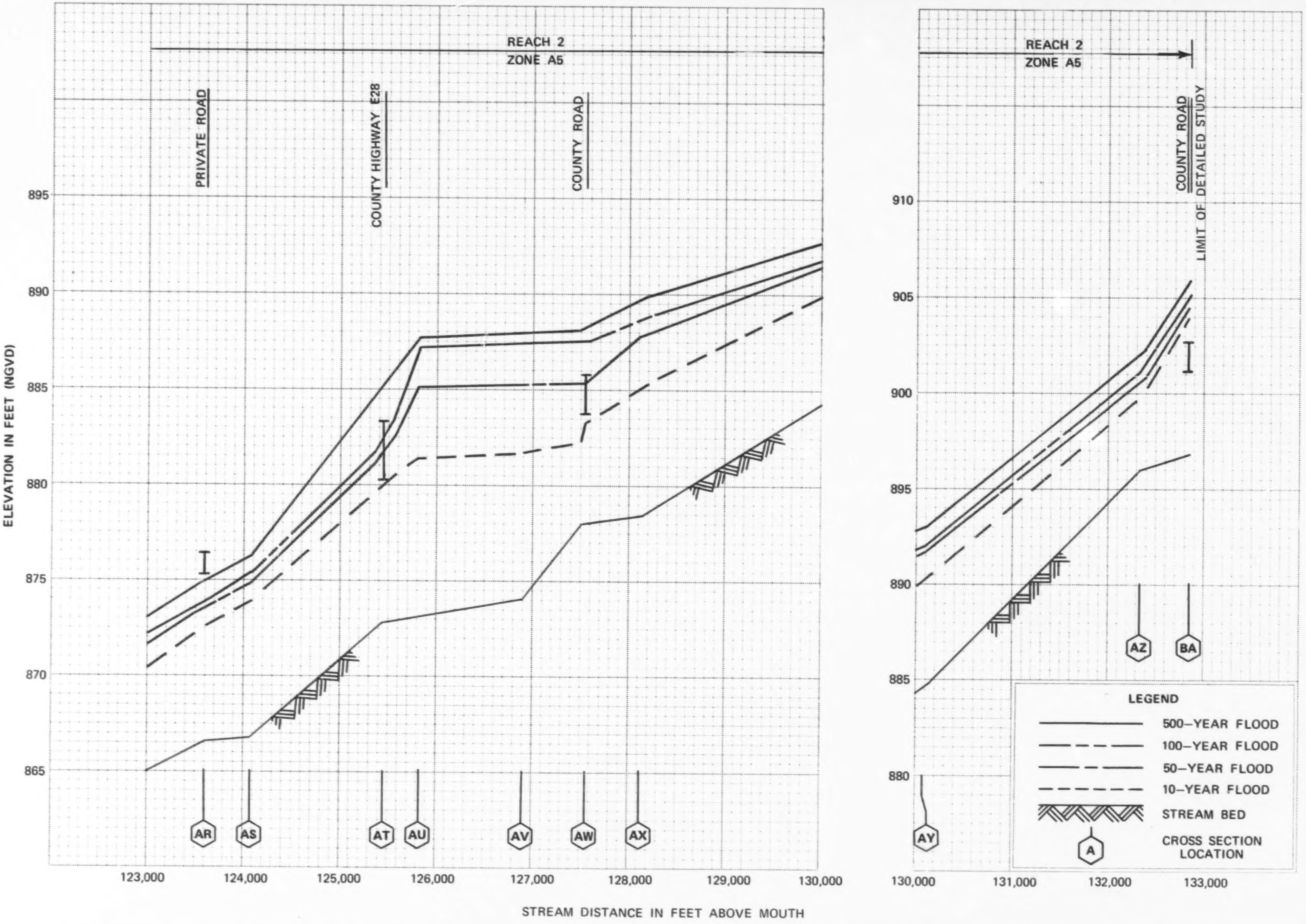

FLOOD PROFILES

INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

39P

91

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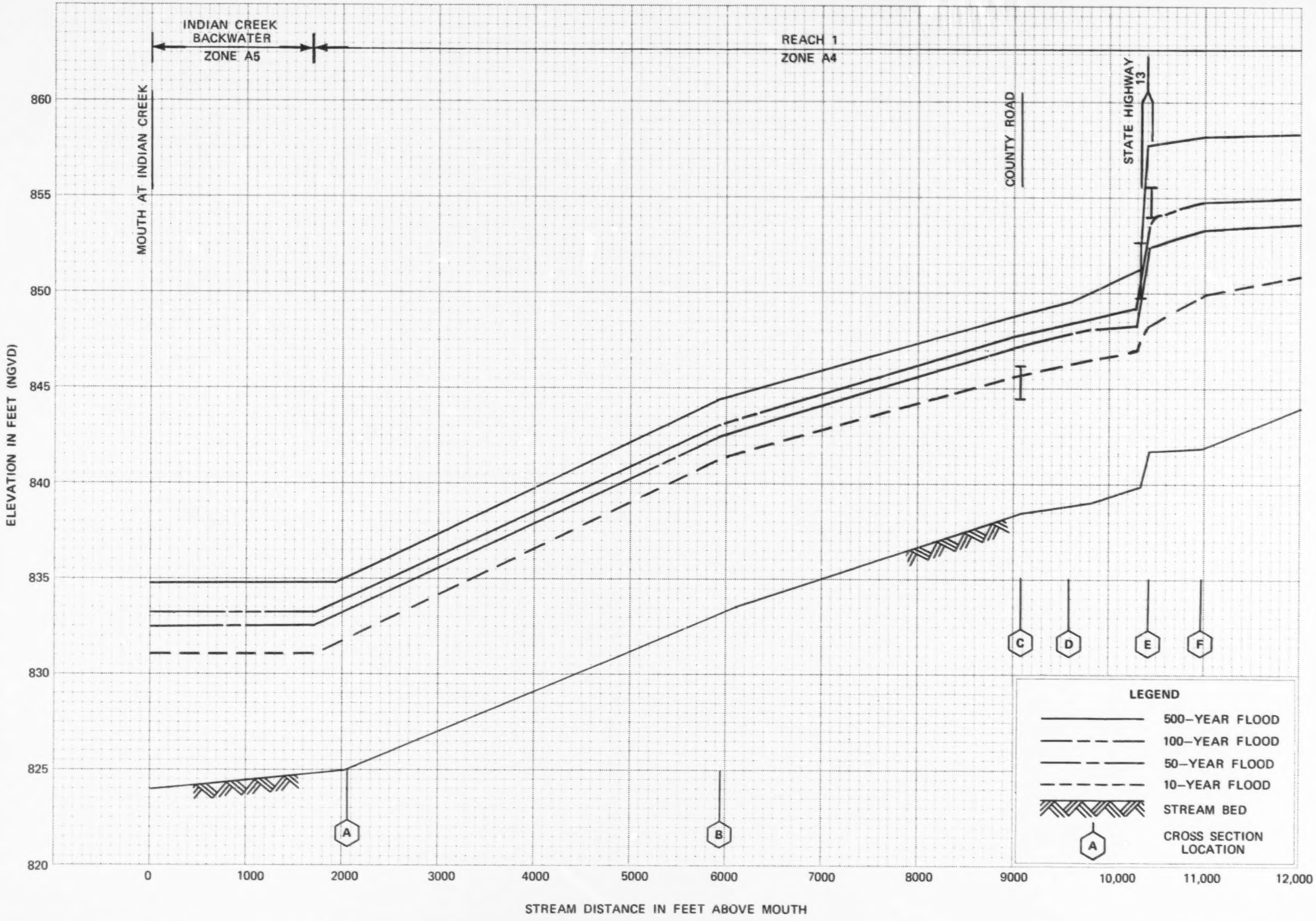


FLOOD PROFILES

EAST INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

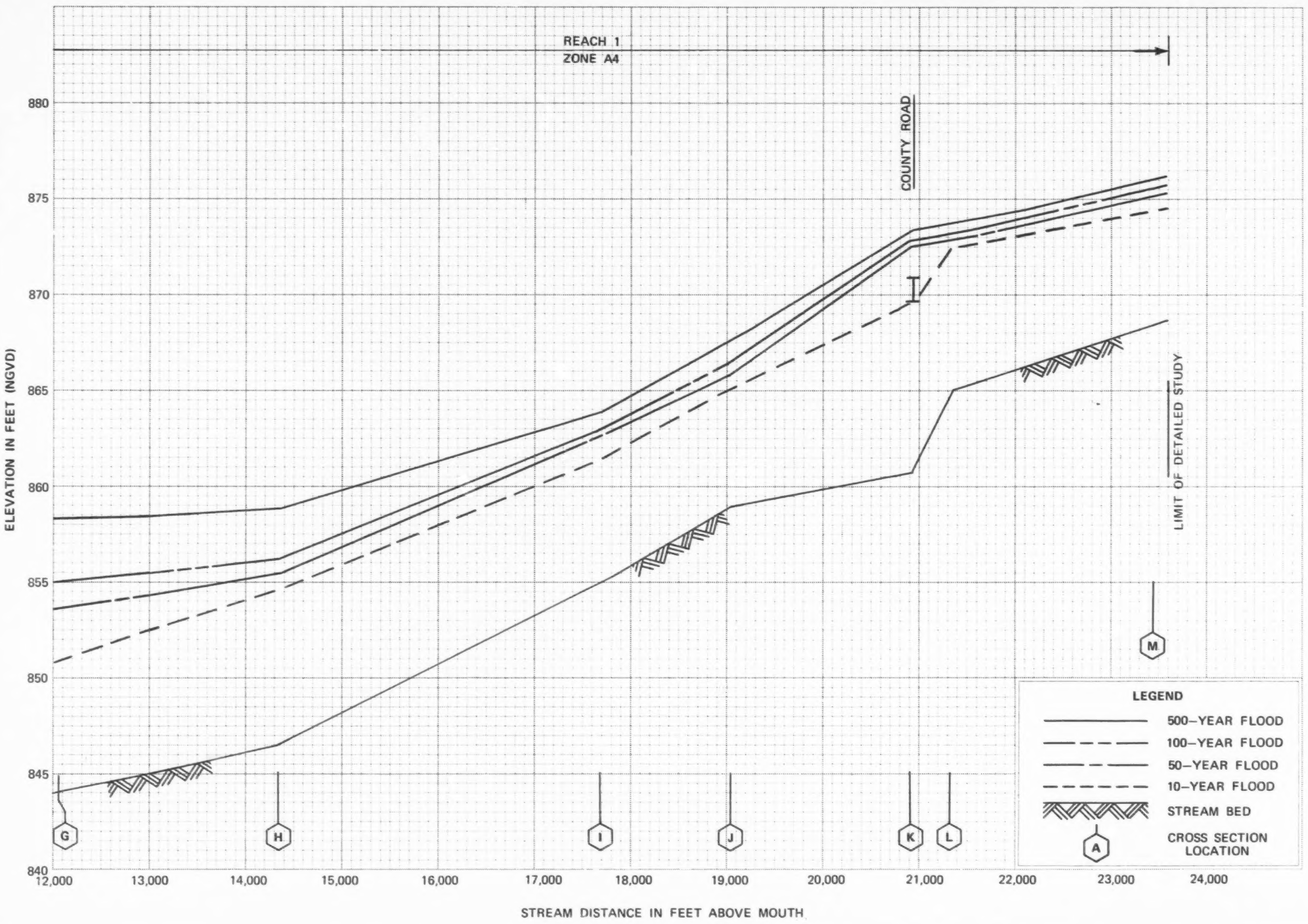
COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

40P

92

BEST DOCUMENT AVAILABLE



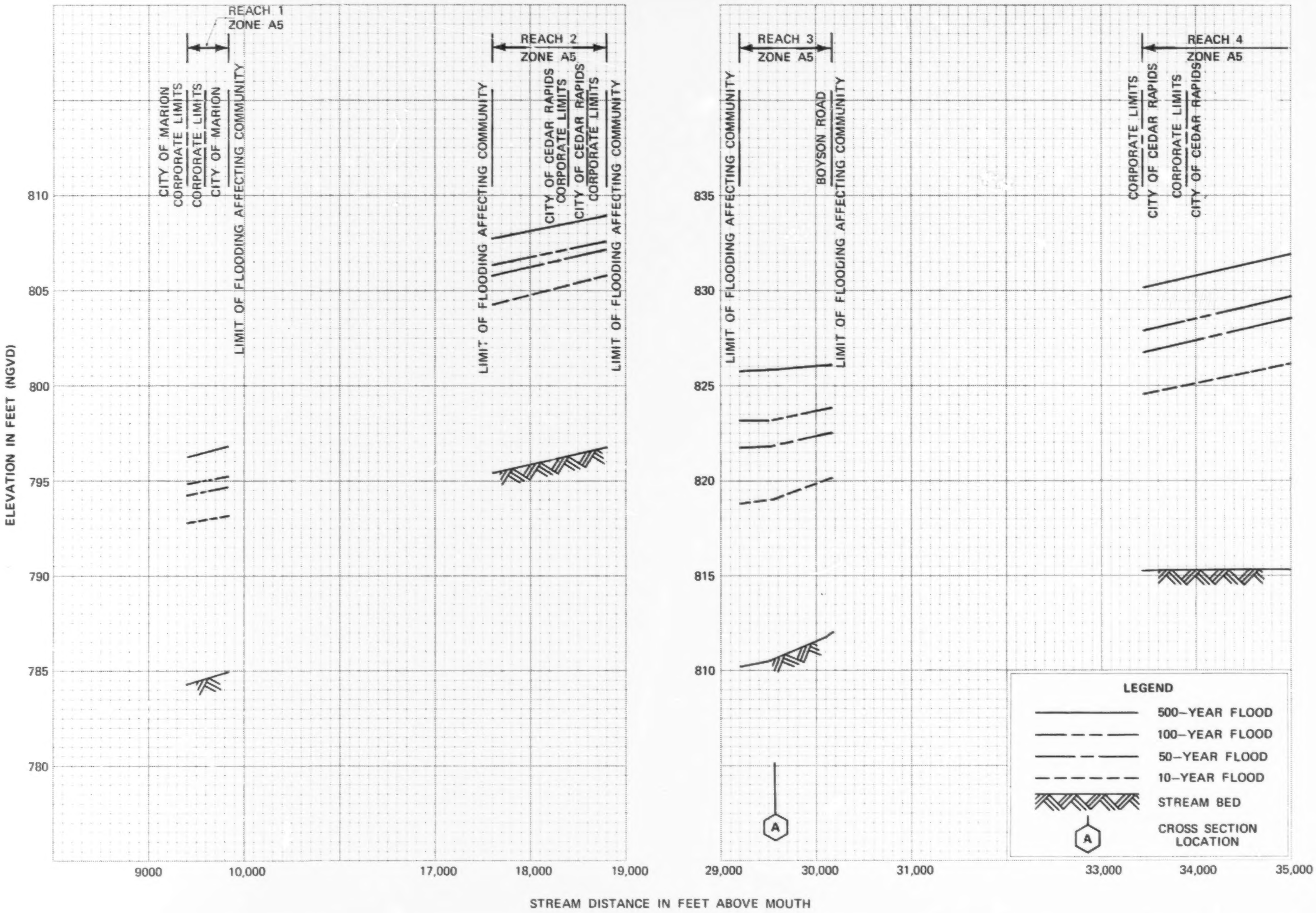
FLOOD PROFILES

EAST INDIAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

DRY CREEK

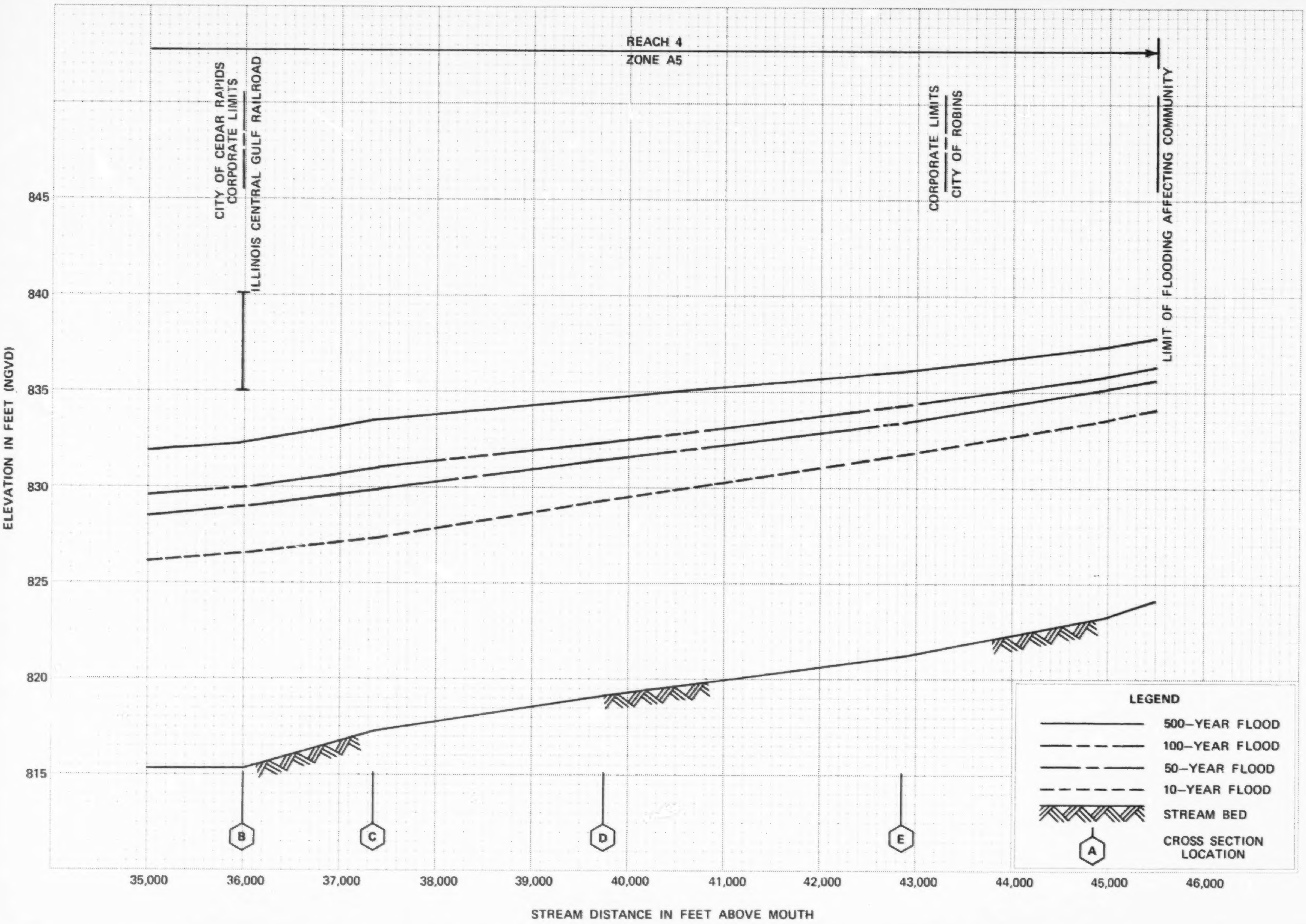
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

42P

94

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

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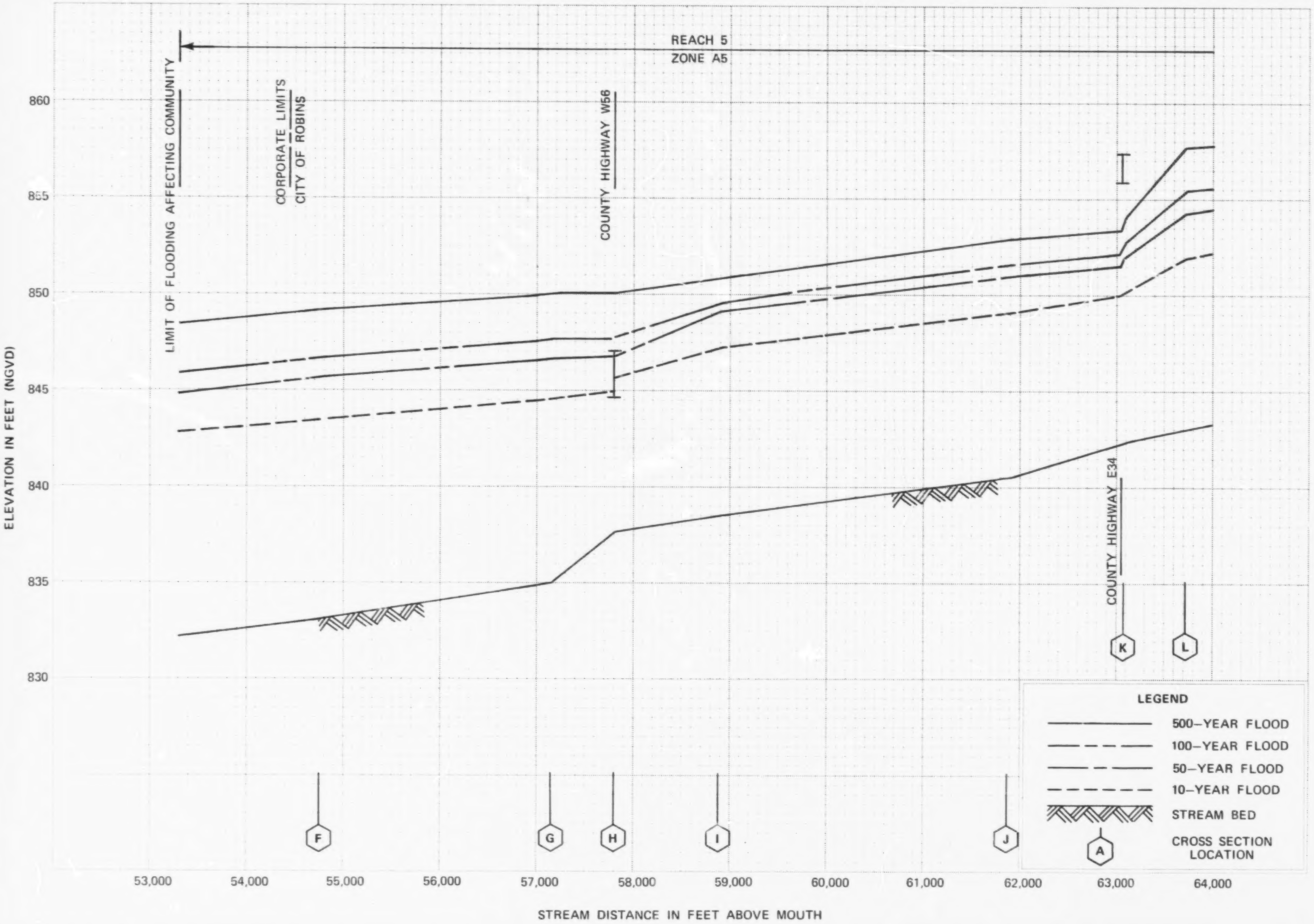


FLOOD PROFILES

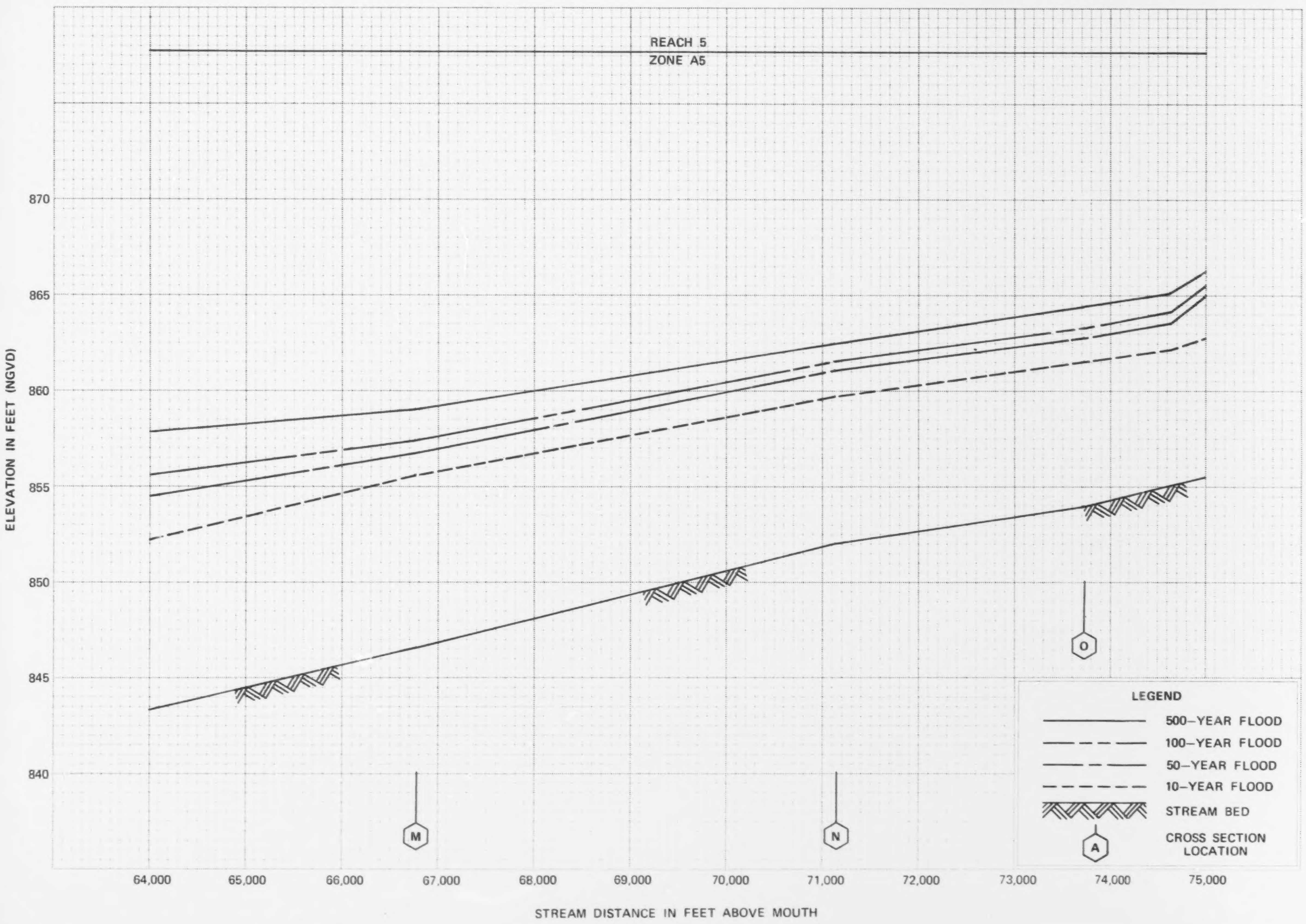
DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

44P



FLOOD PROFILES

DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

45P

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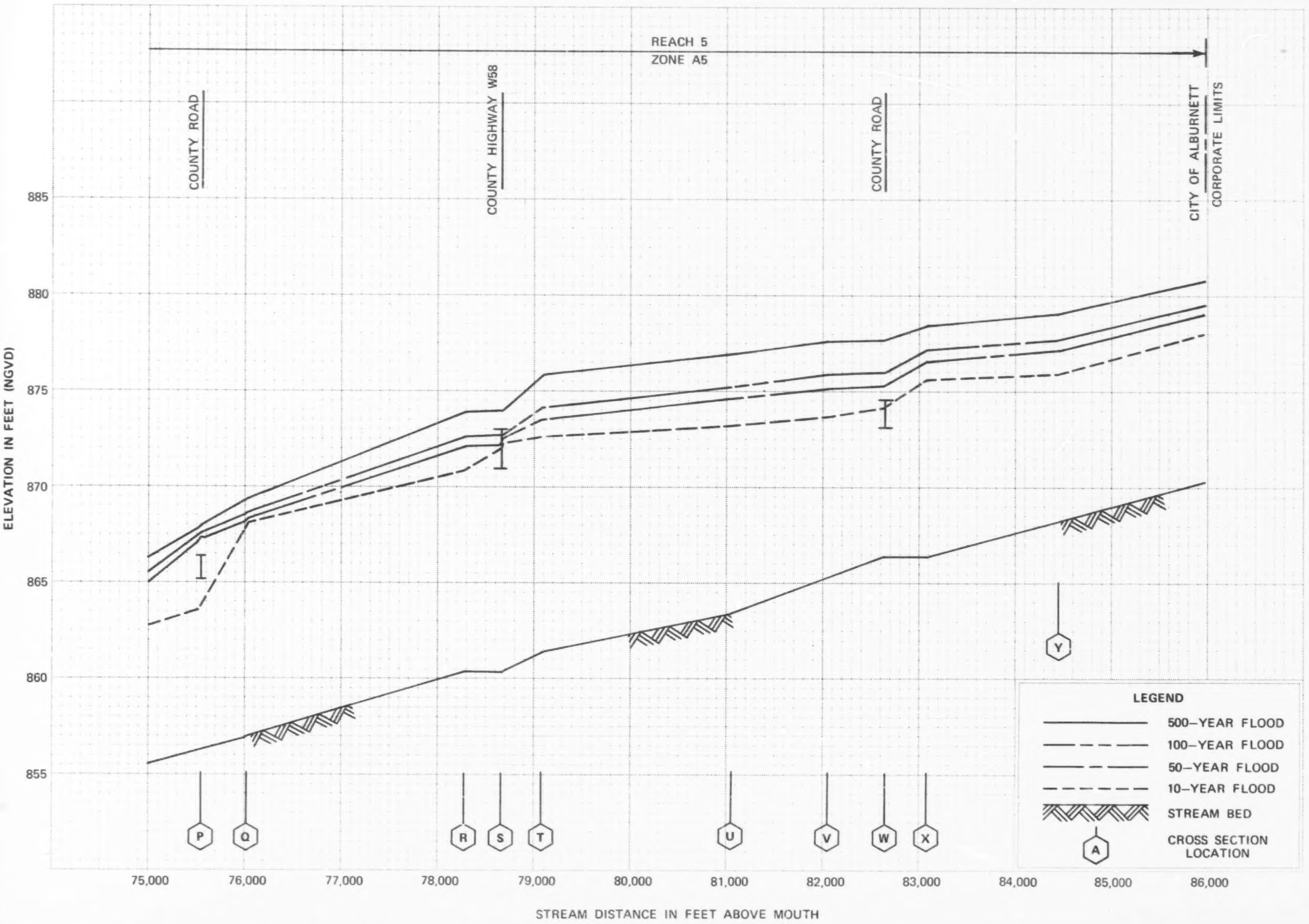

FLOOD PROFILES

DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

46P

98

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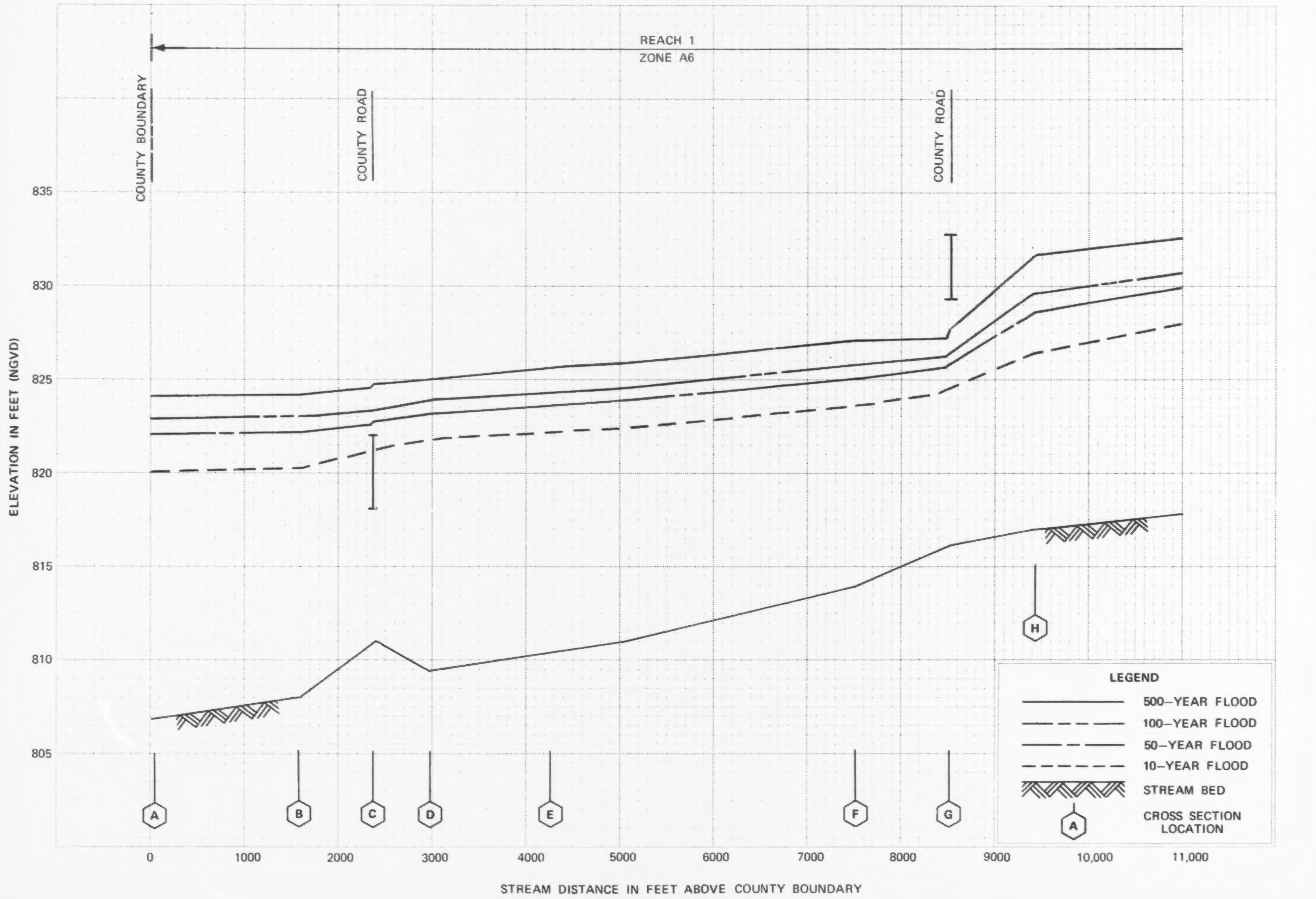


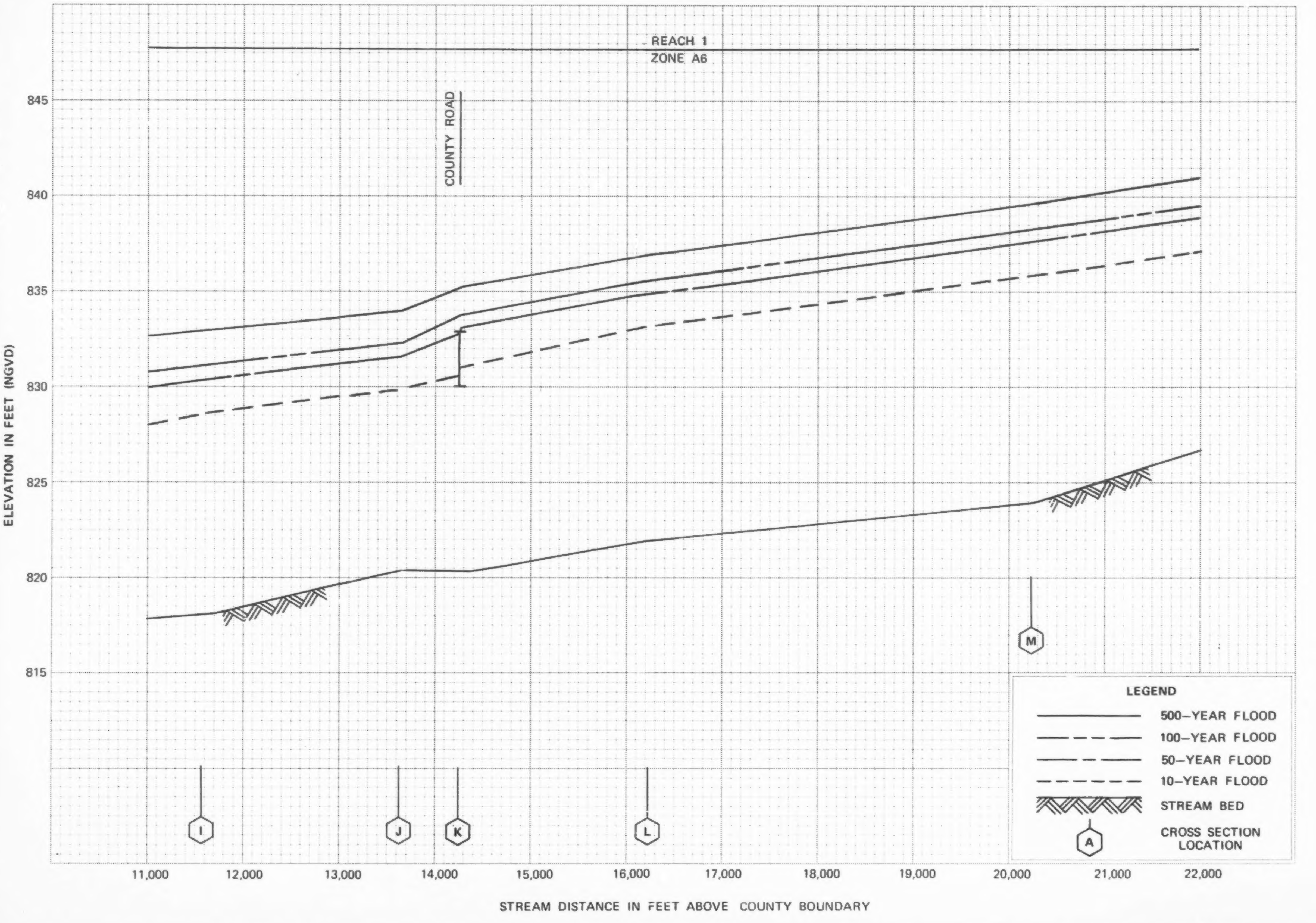
FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

47P



FLOOD PROFILES

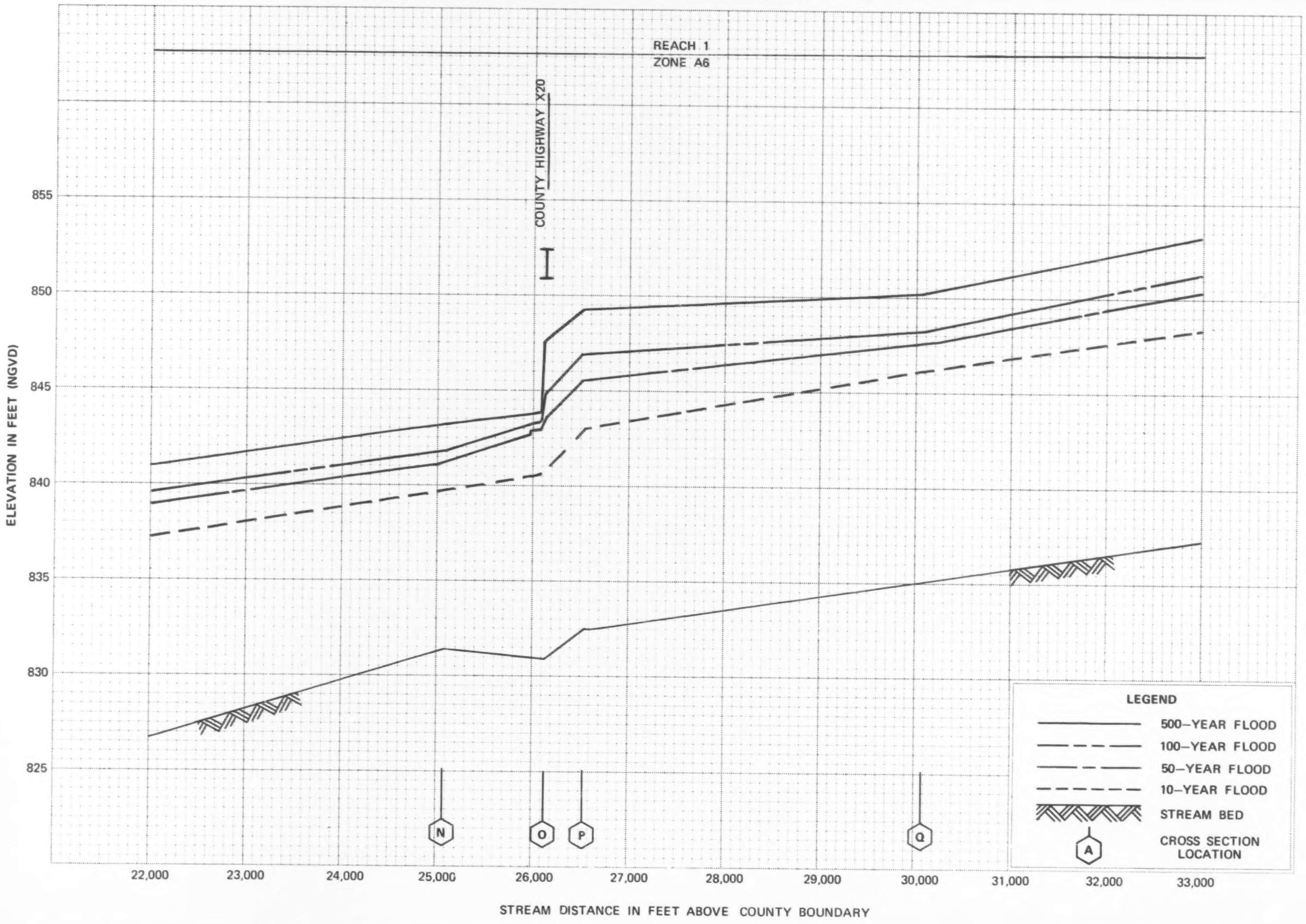
BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

BEST DOCUMENT AVAILABLE

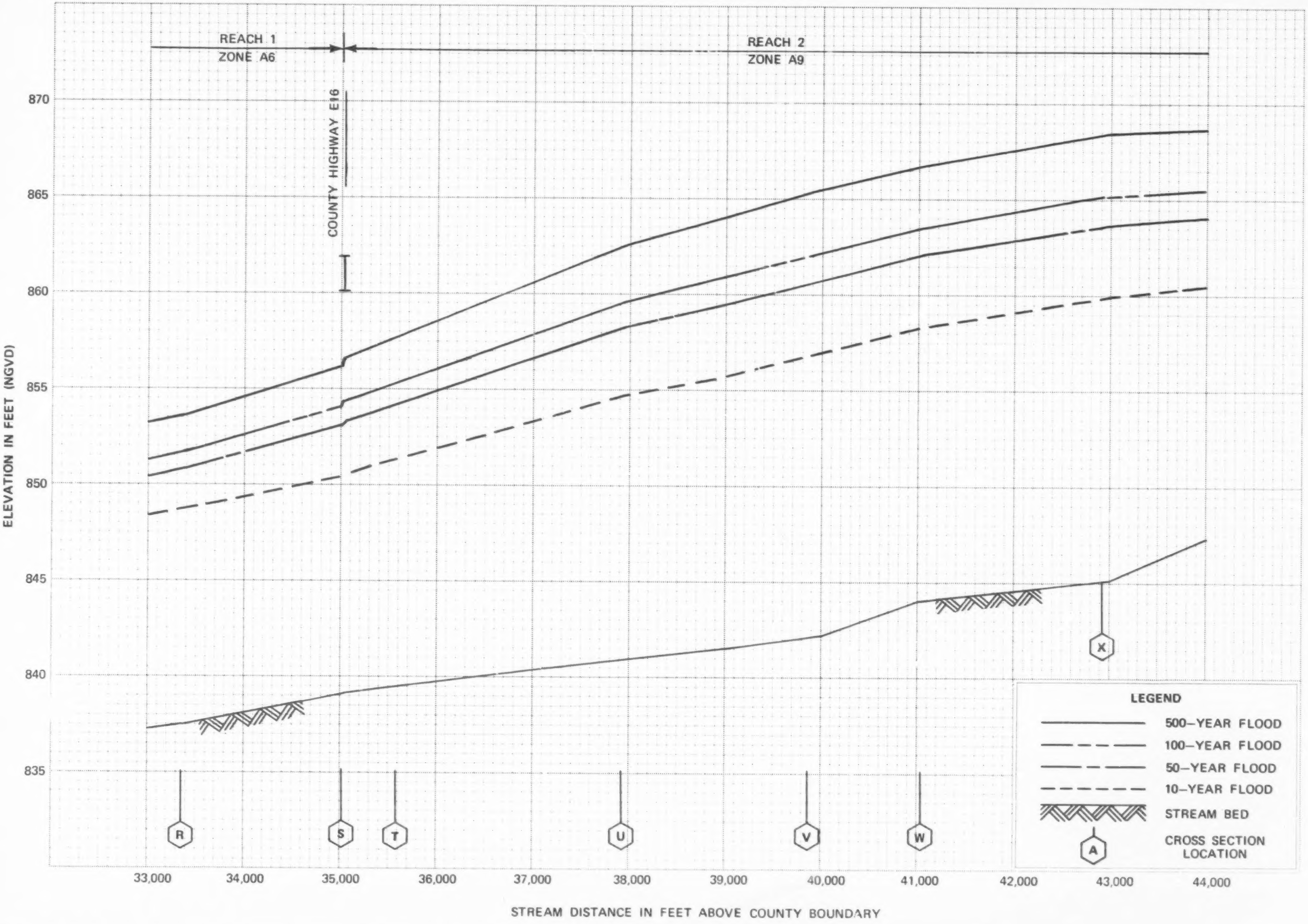


FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

BUFFALO CREEK

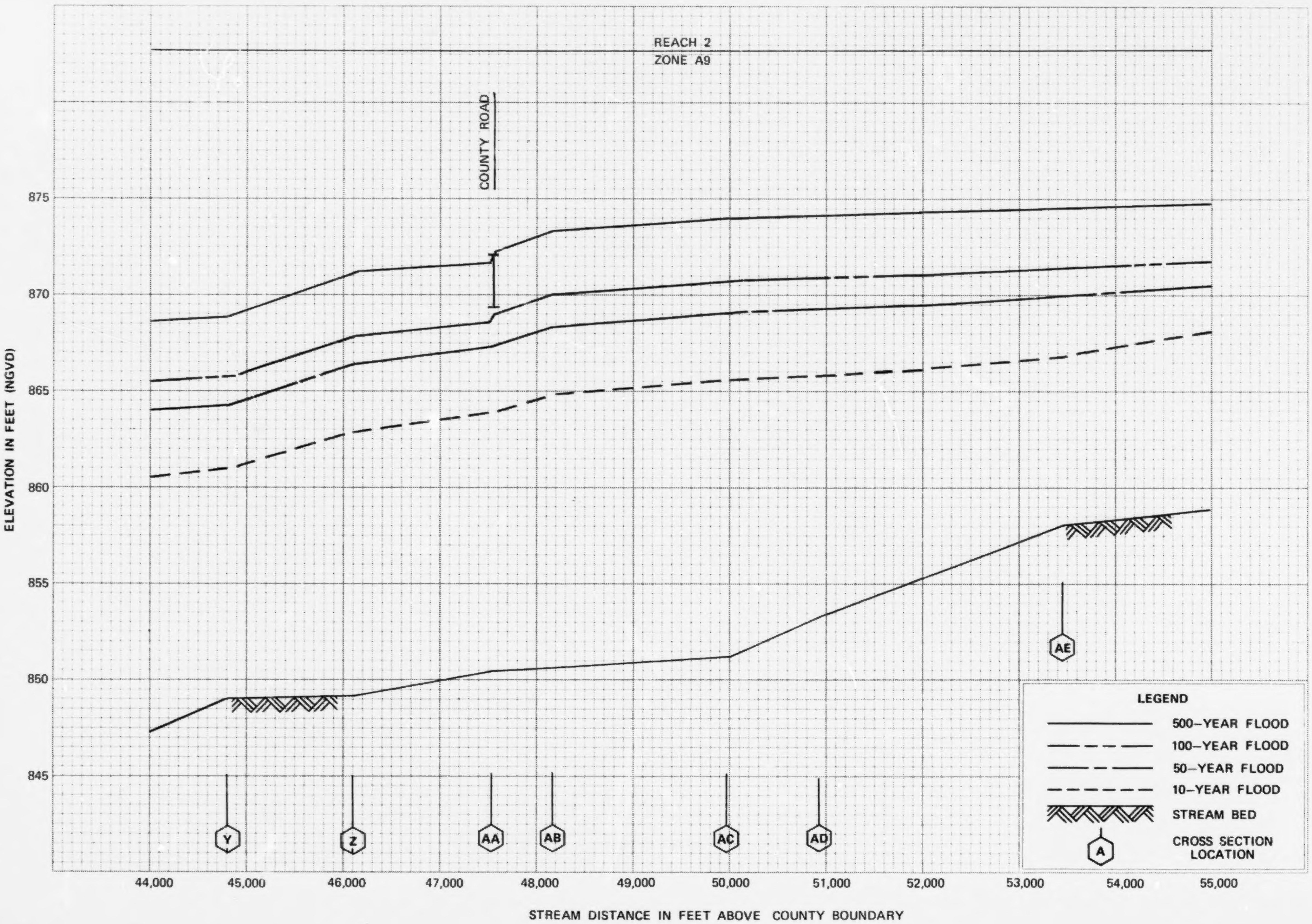
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

50P

102

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

51P

103

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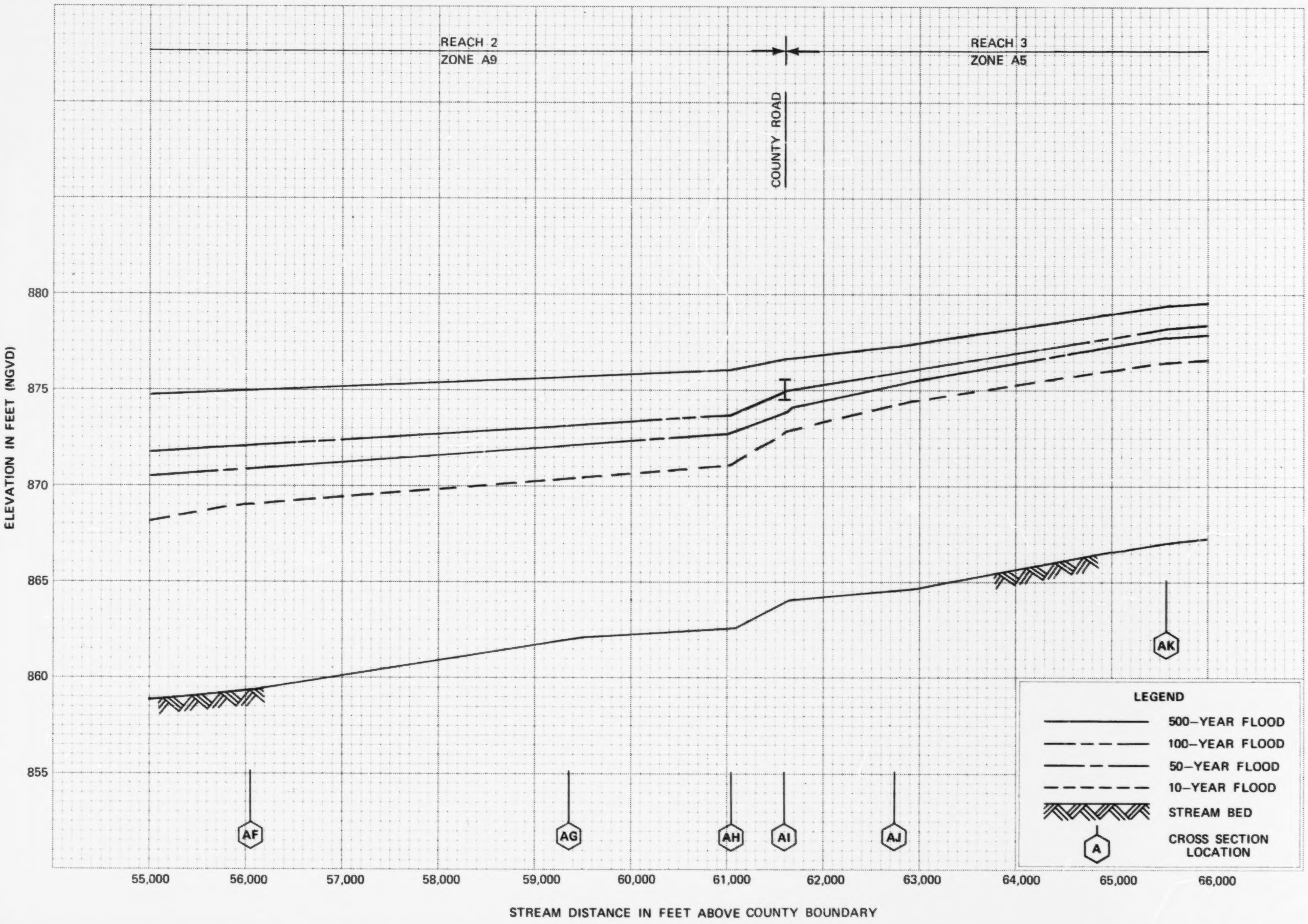

FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

52P

104

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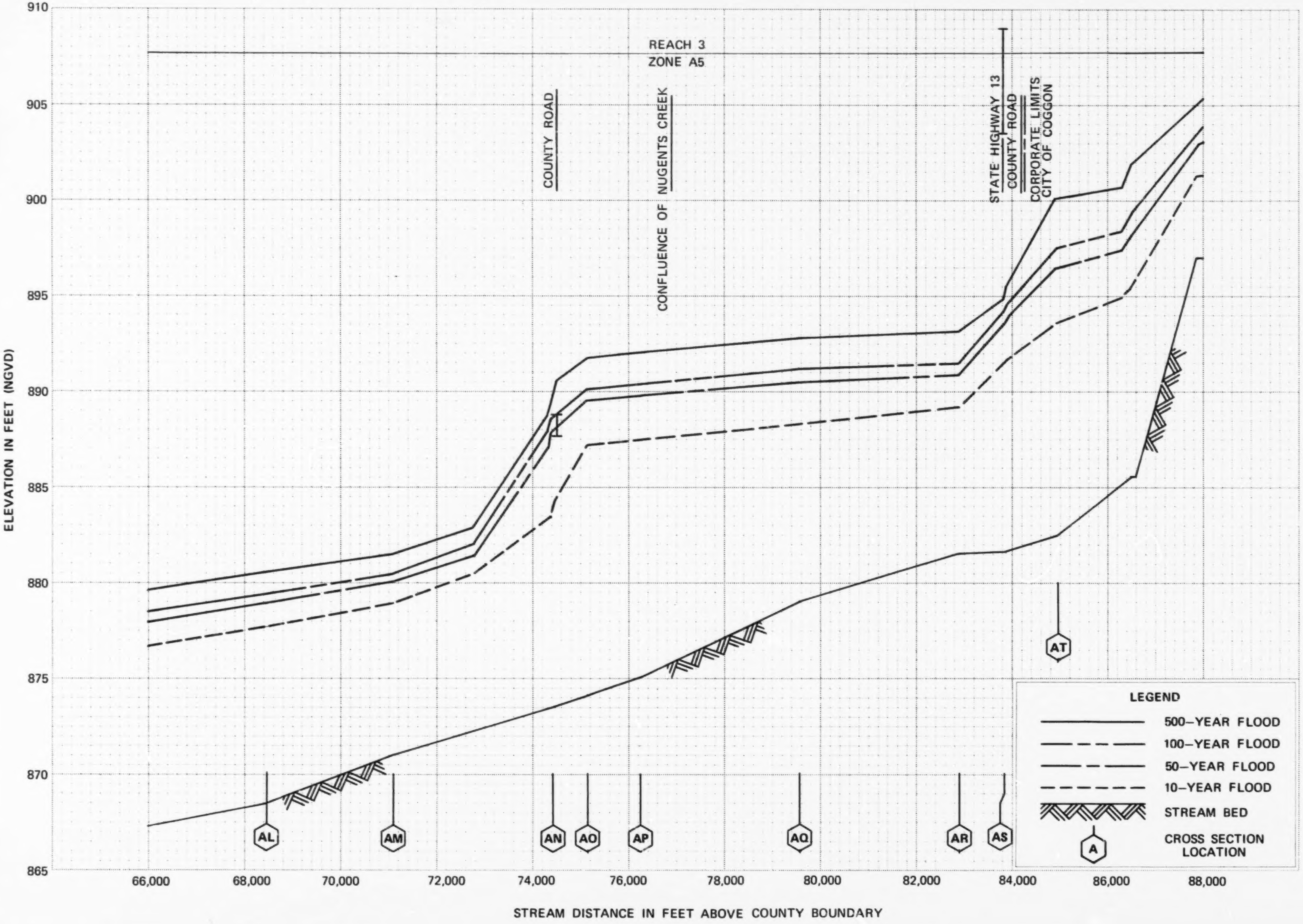

FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

105

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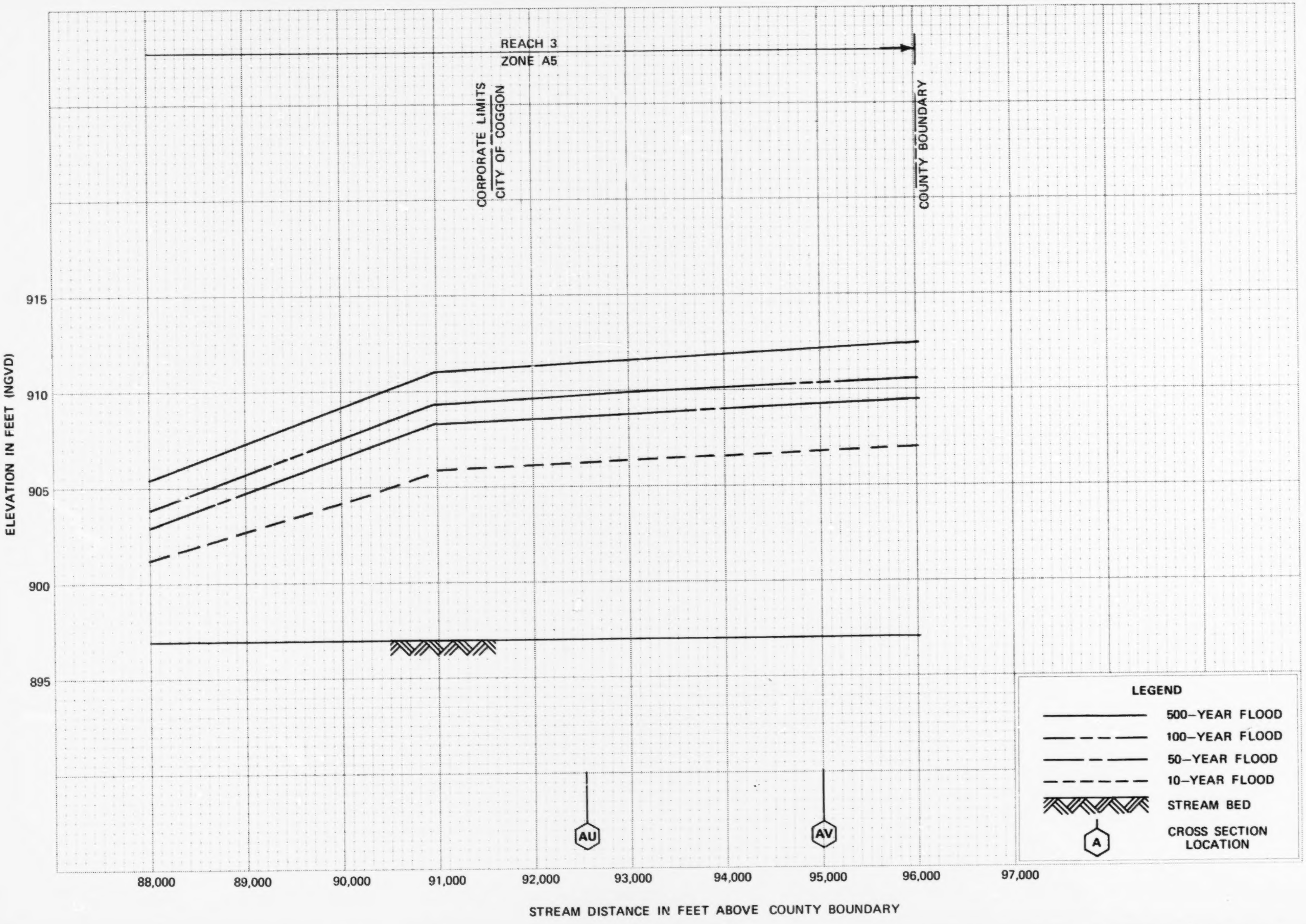


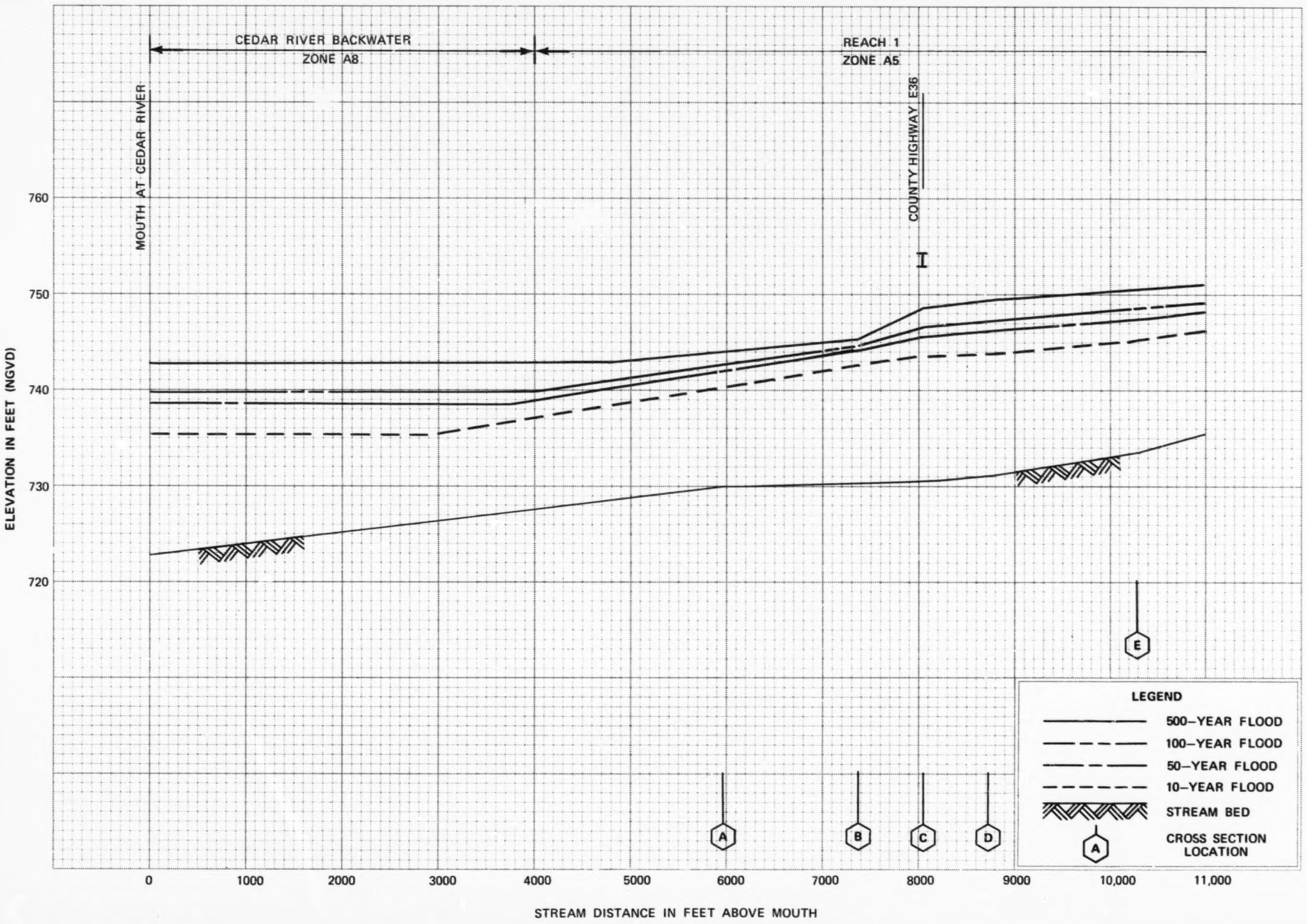
FLOOD PROFILES

BUFFALO CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

54P



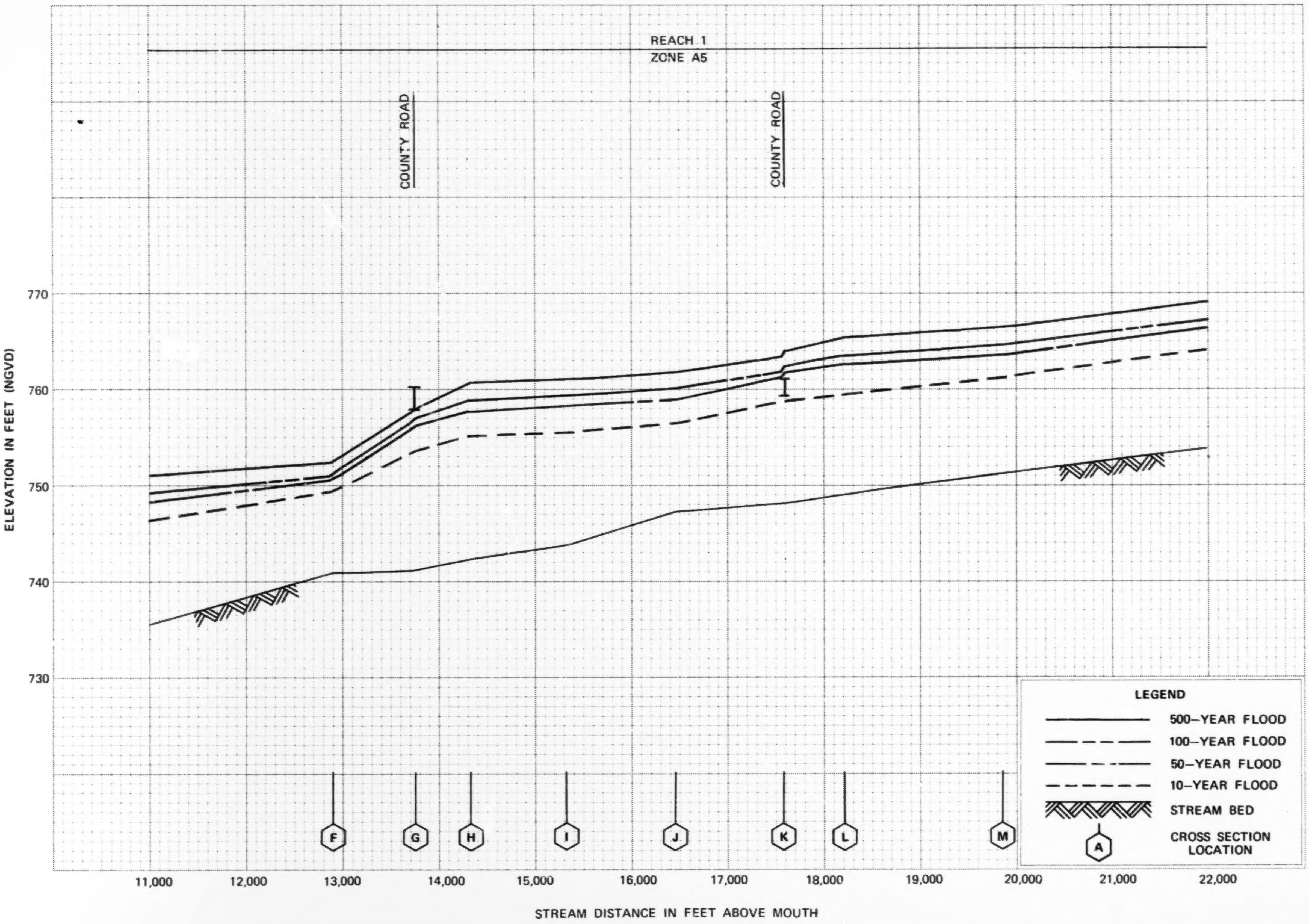
FLOOD PROFILES

OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

107

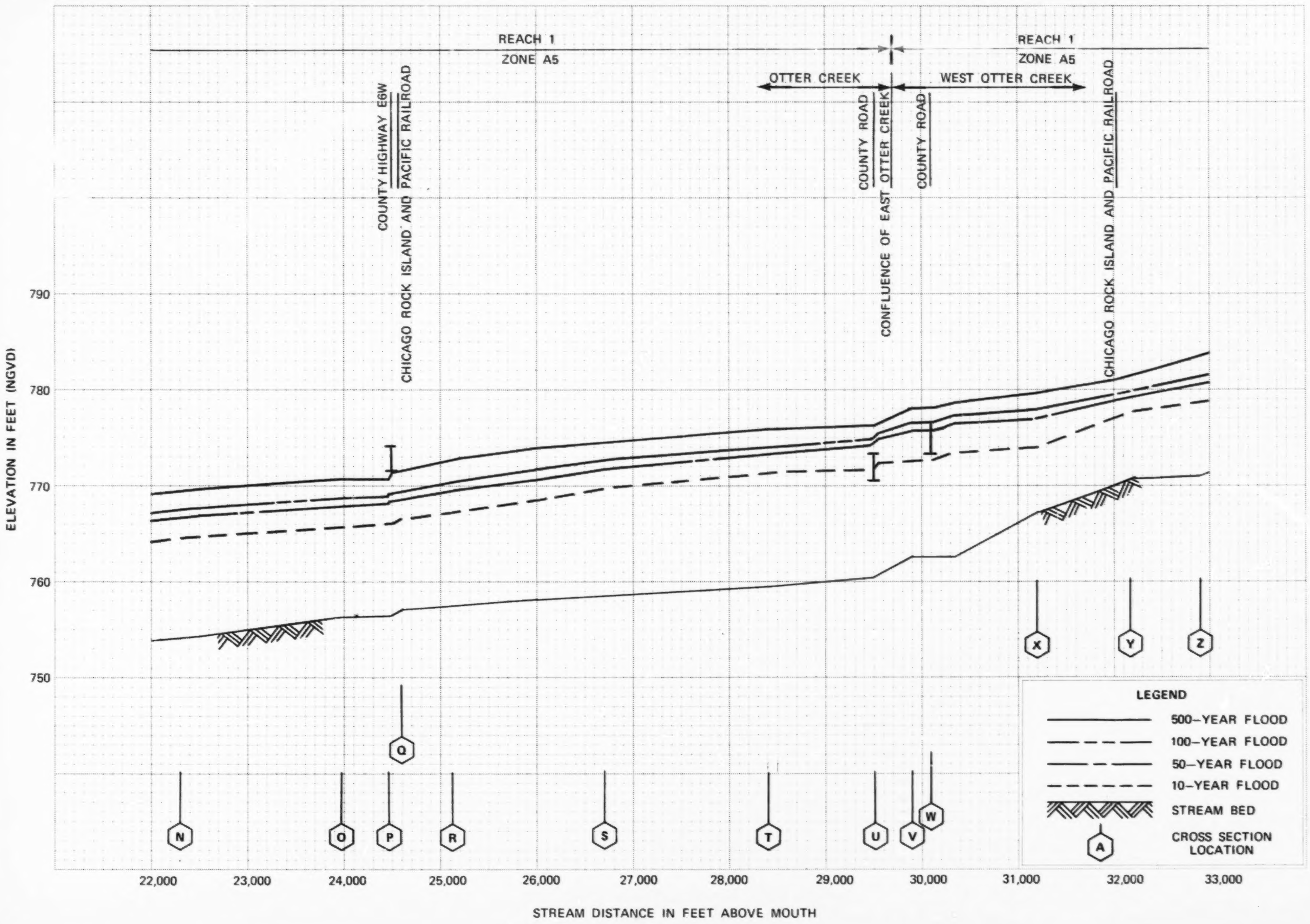


FLOOD PROFILES

OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

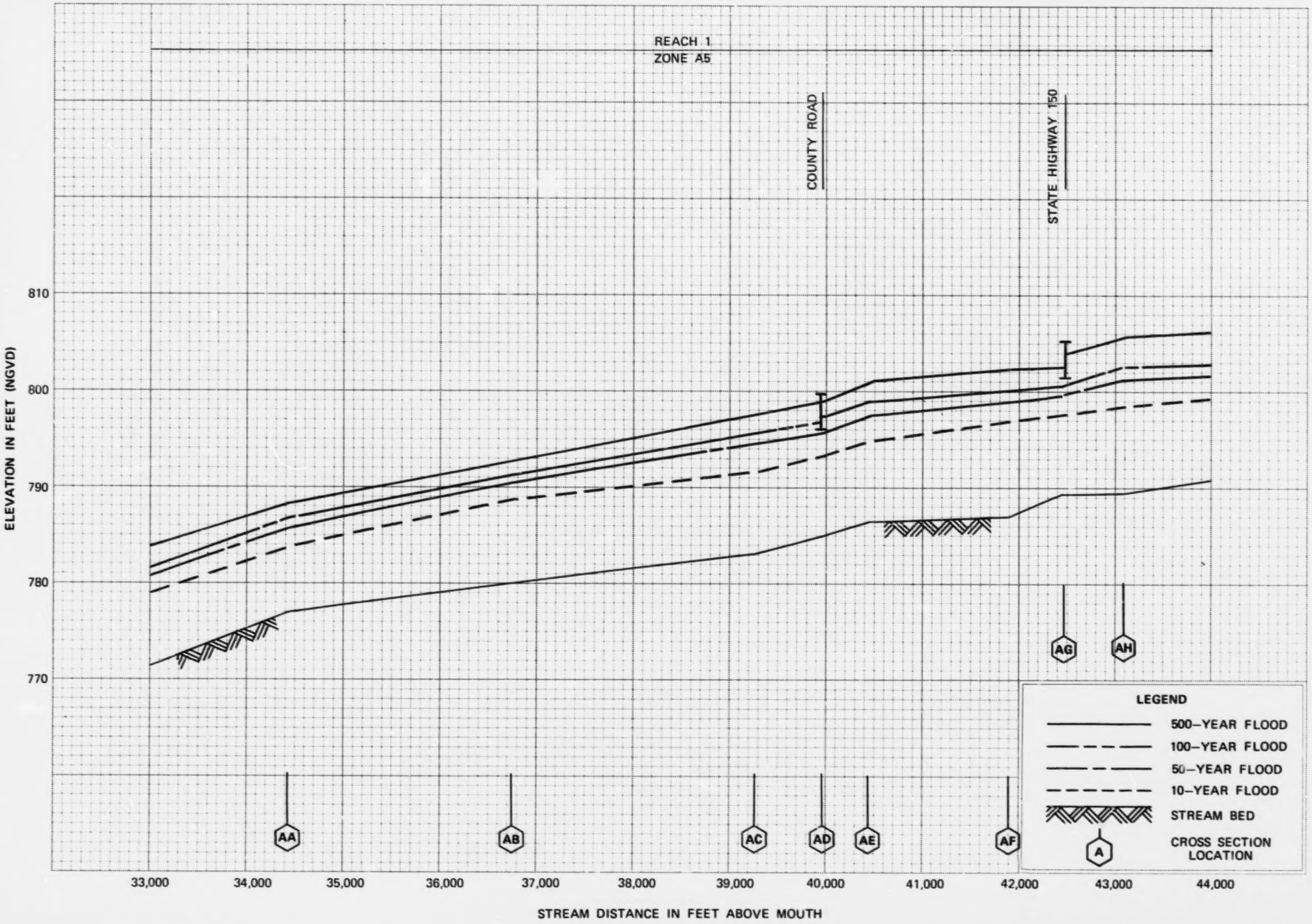


FLOOD PROFILES

OTTER CREEK-WEST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



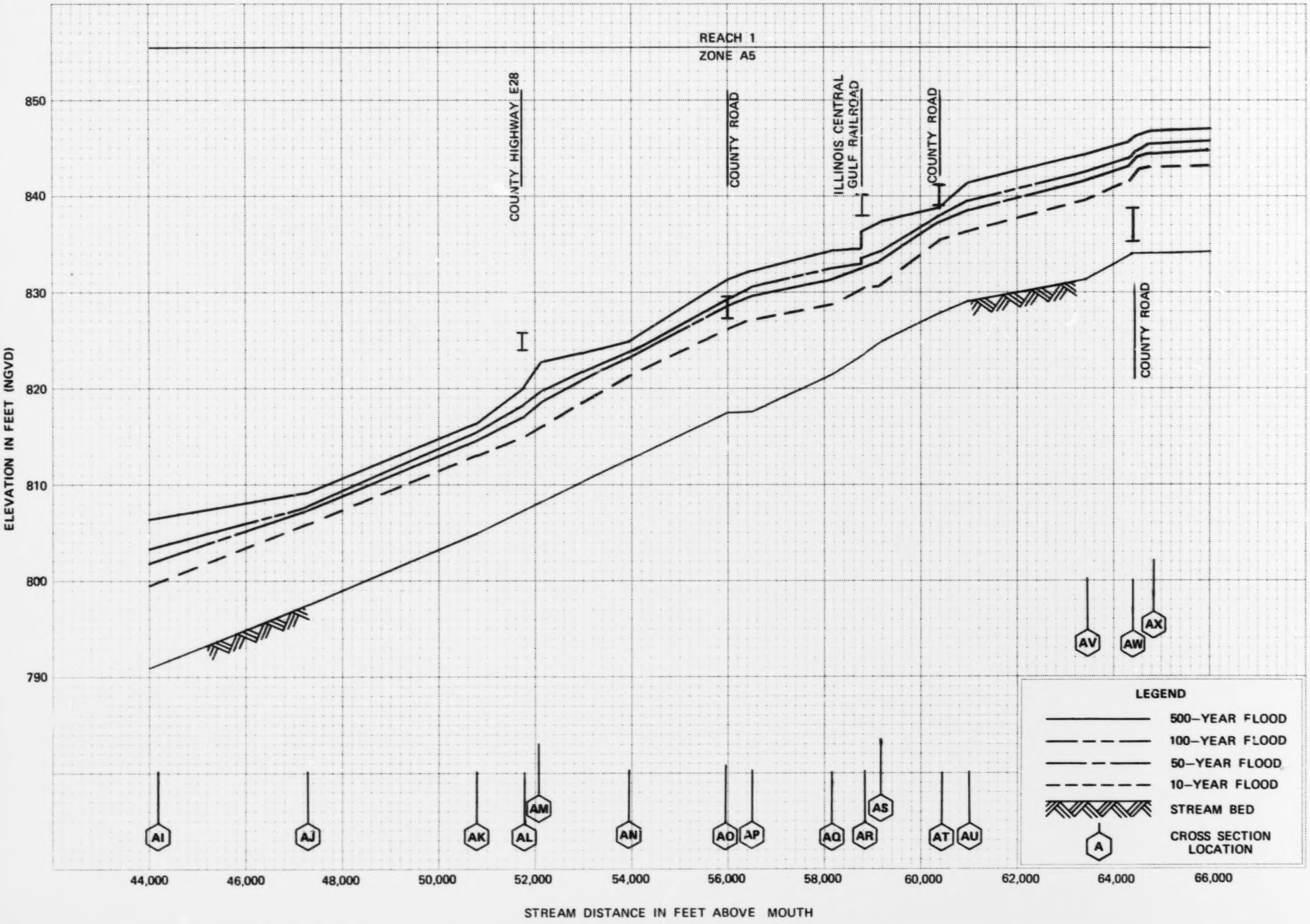
FLOOD PROFILES

WEST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

WEST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

59P

111

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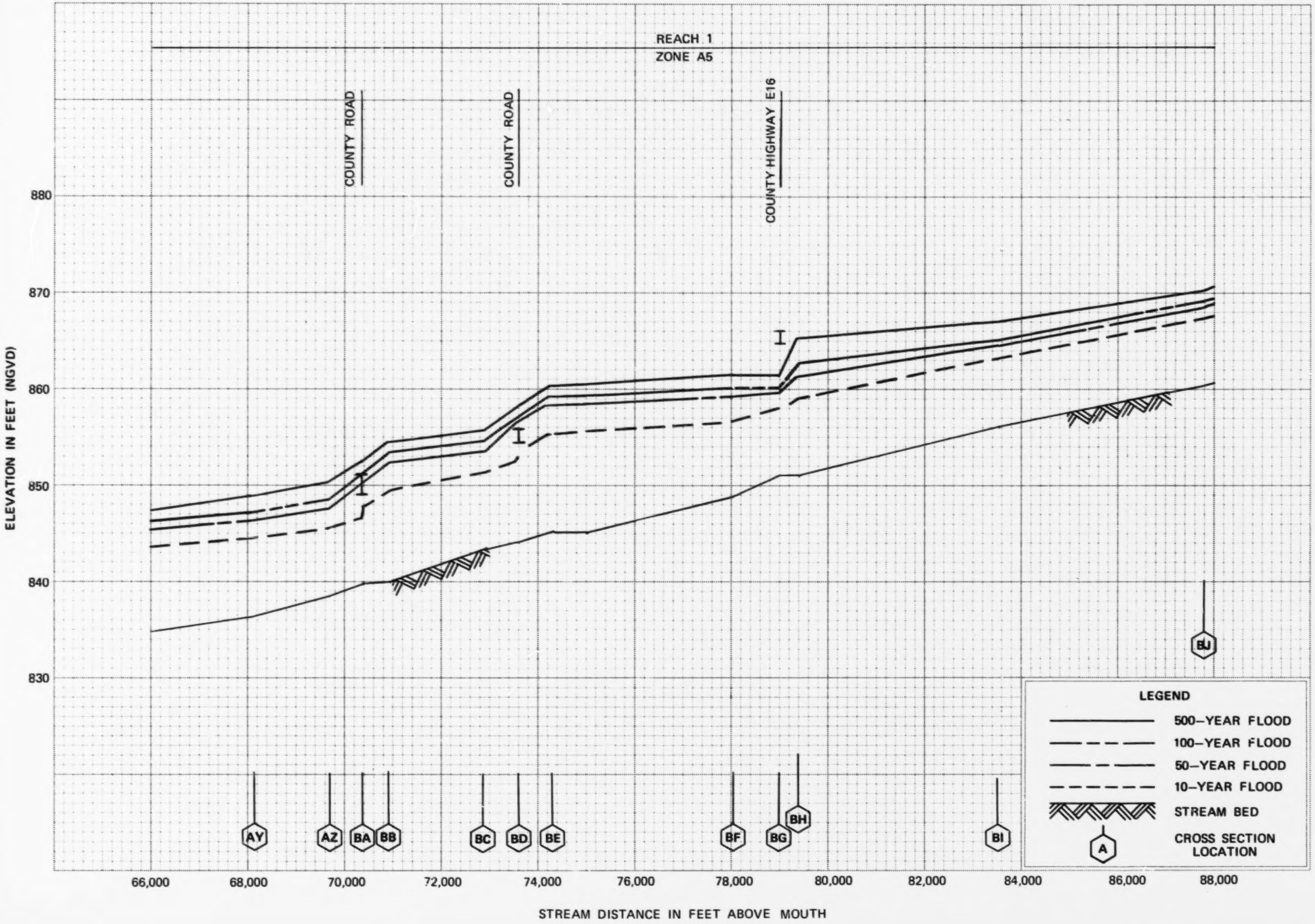

FLOOD PROFILES

WEST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

60P

112

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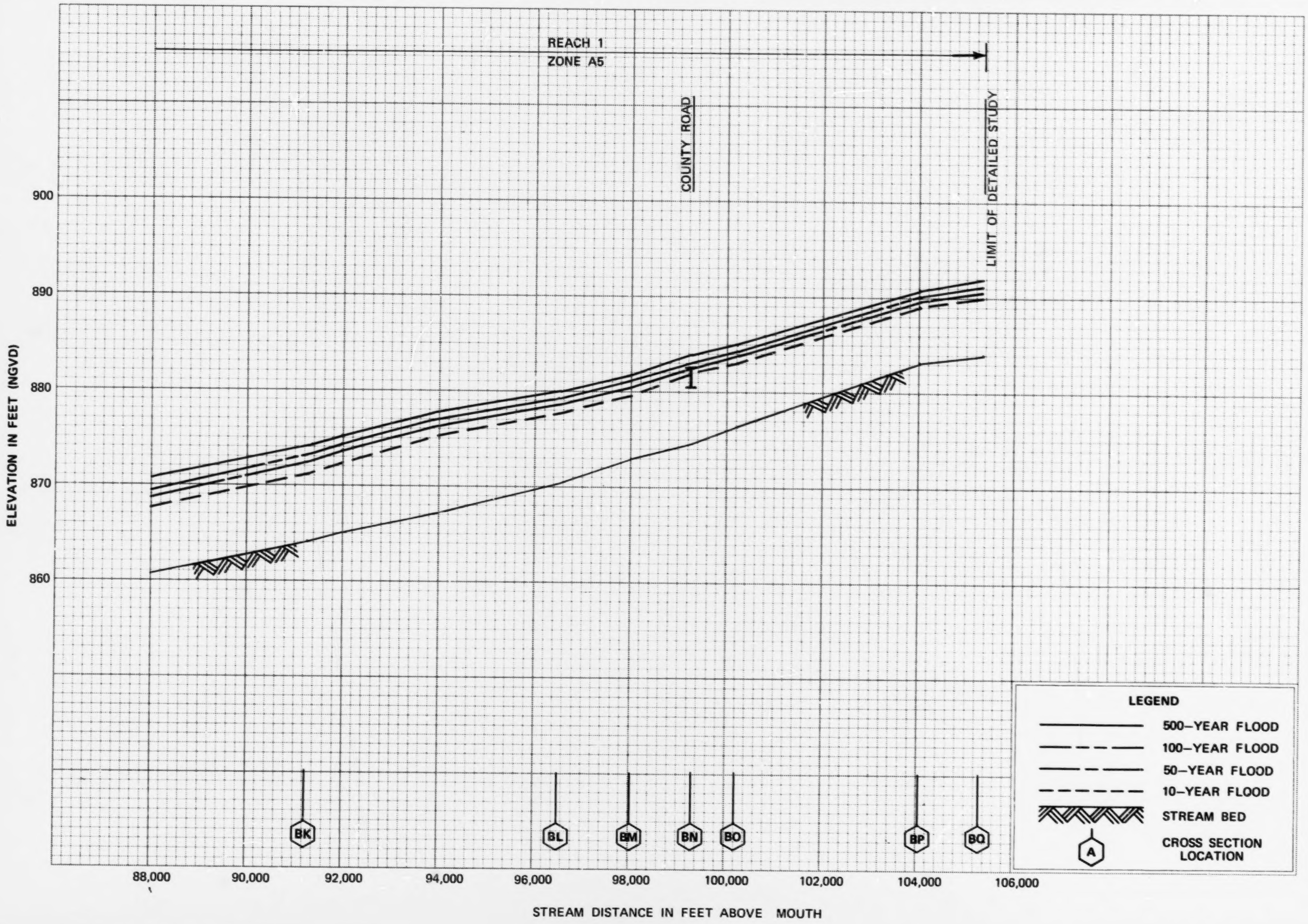

FLOOD PROFILES

WEST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

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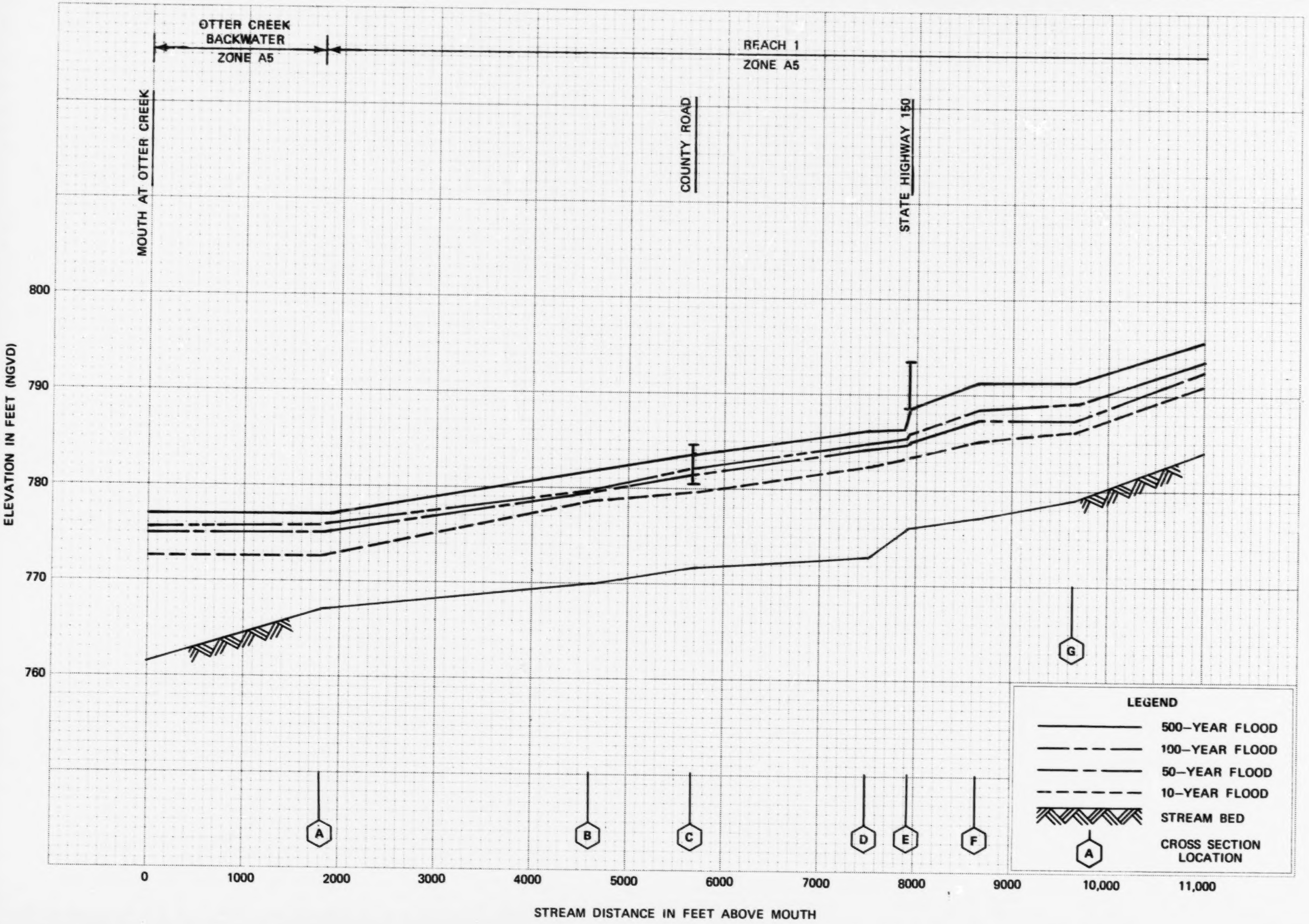
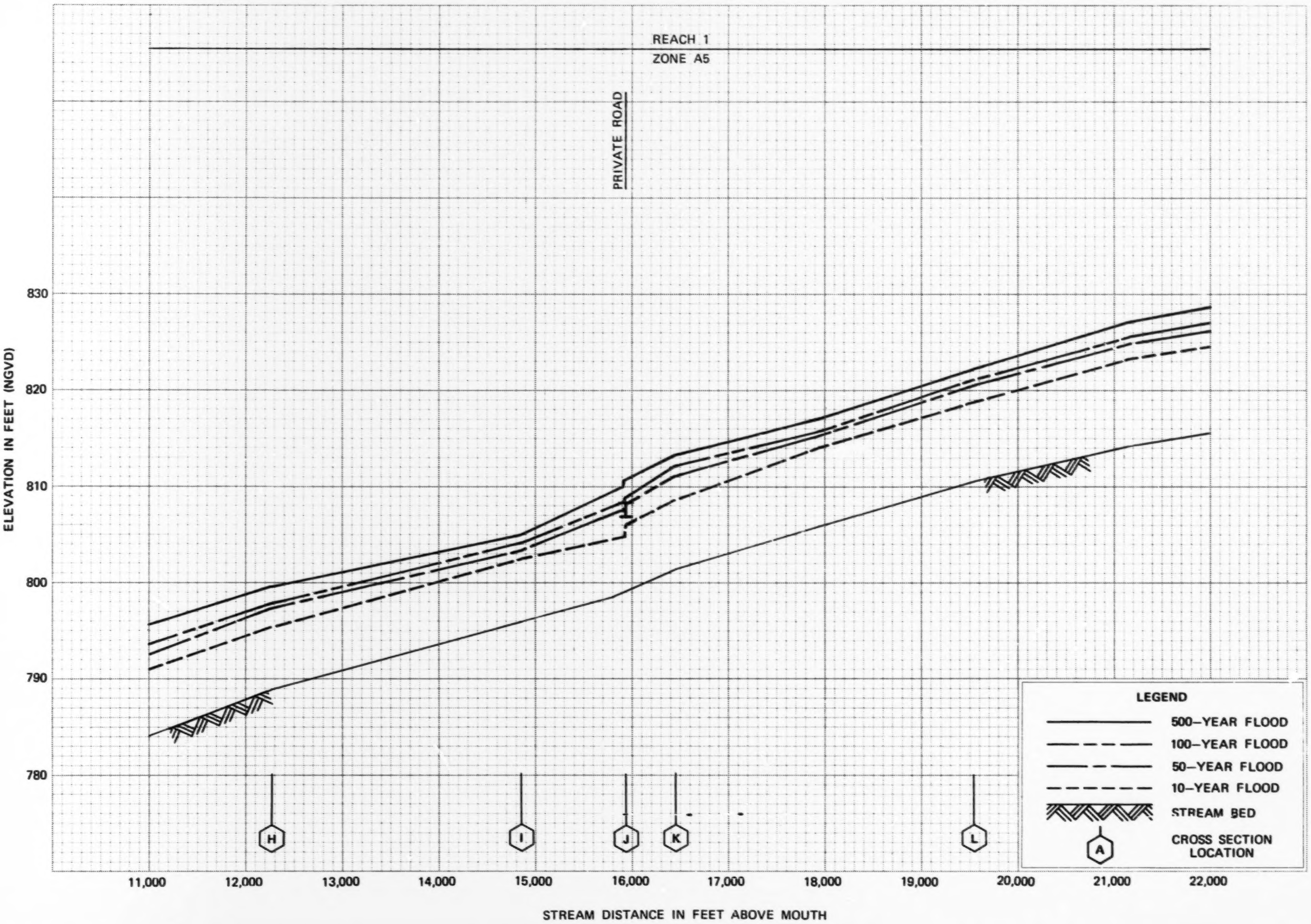


FLOOD PROFILES

EAST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



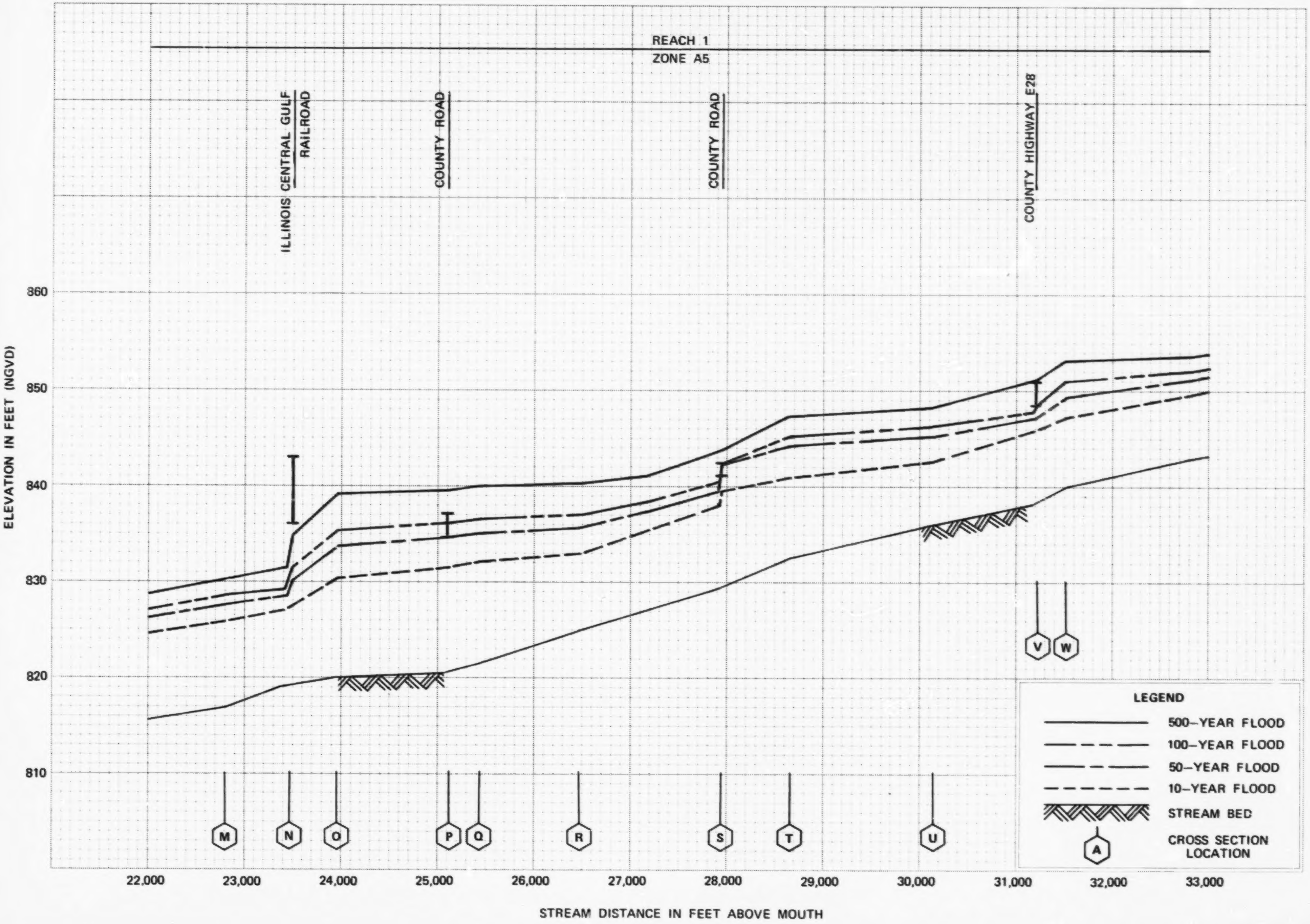
FLOOD PROFILES

EAST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

115

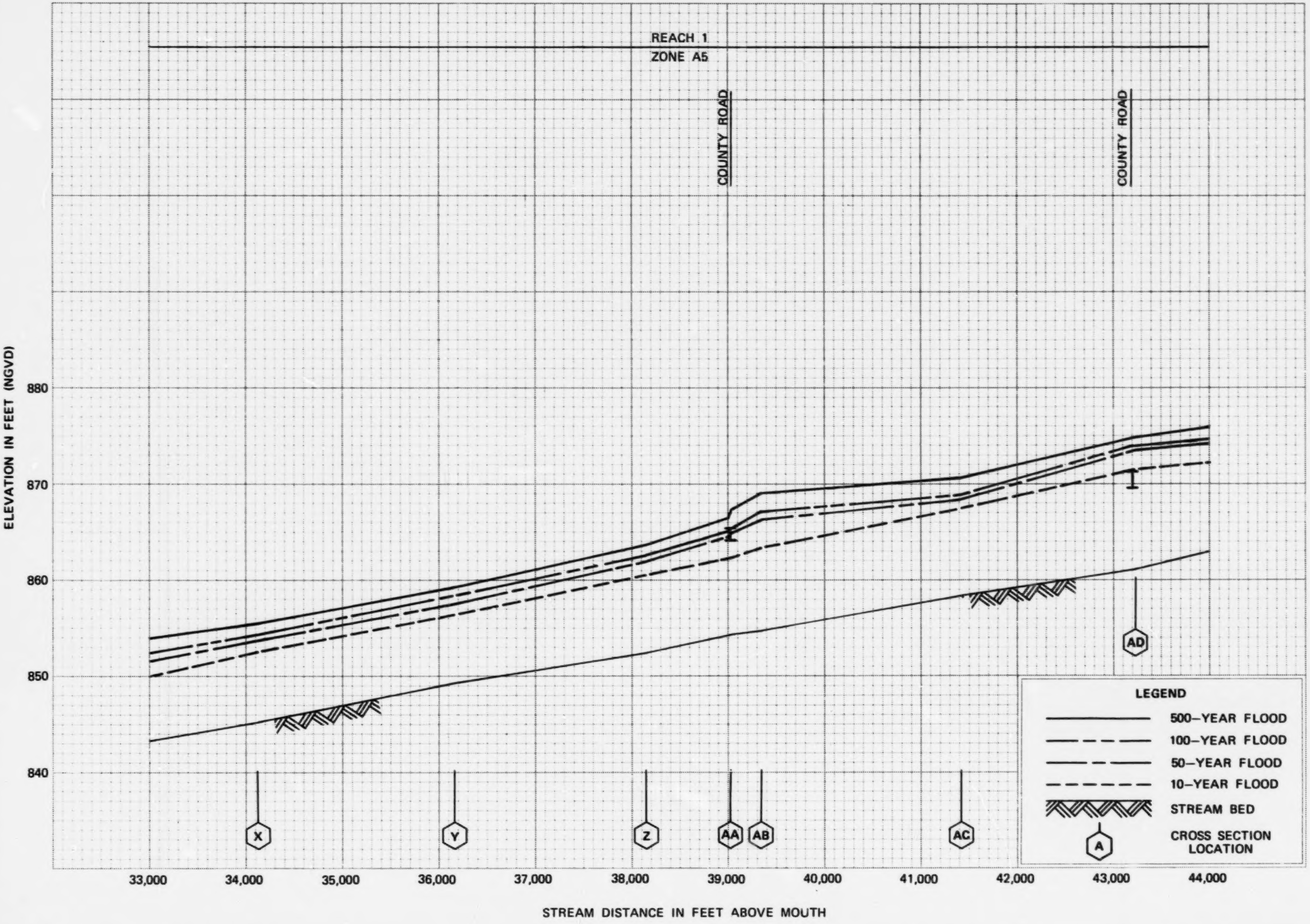


FLOOD PROFILES

EAST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



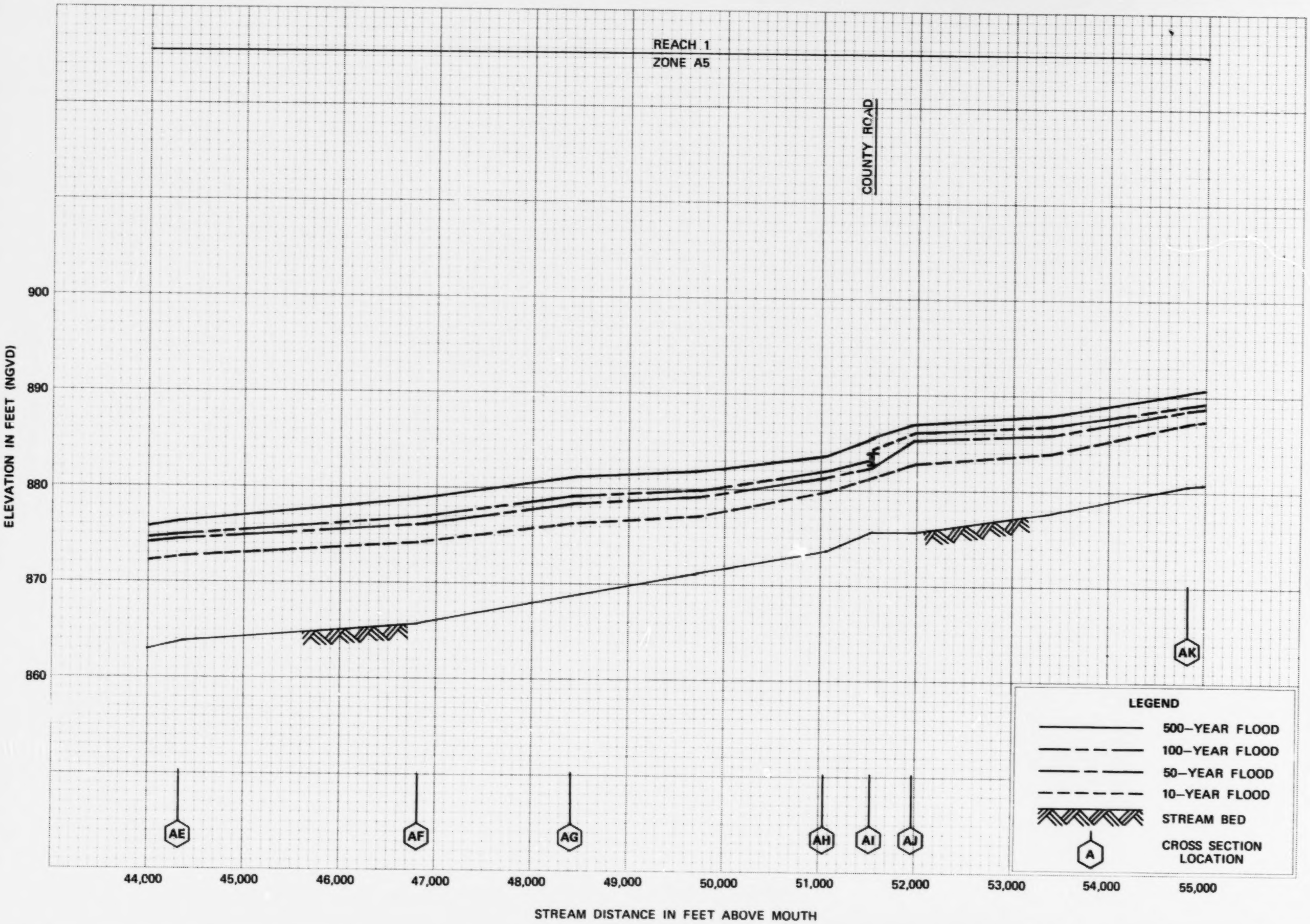
FLOOD PROFILES

EAST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

65P

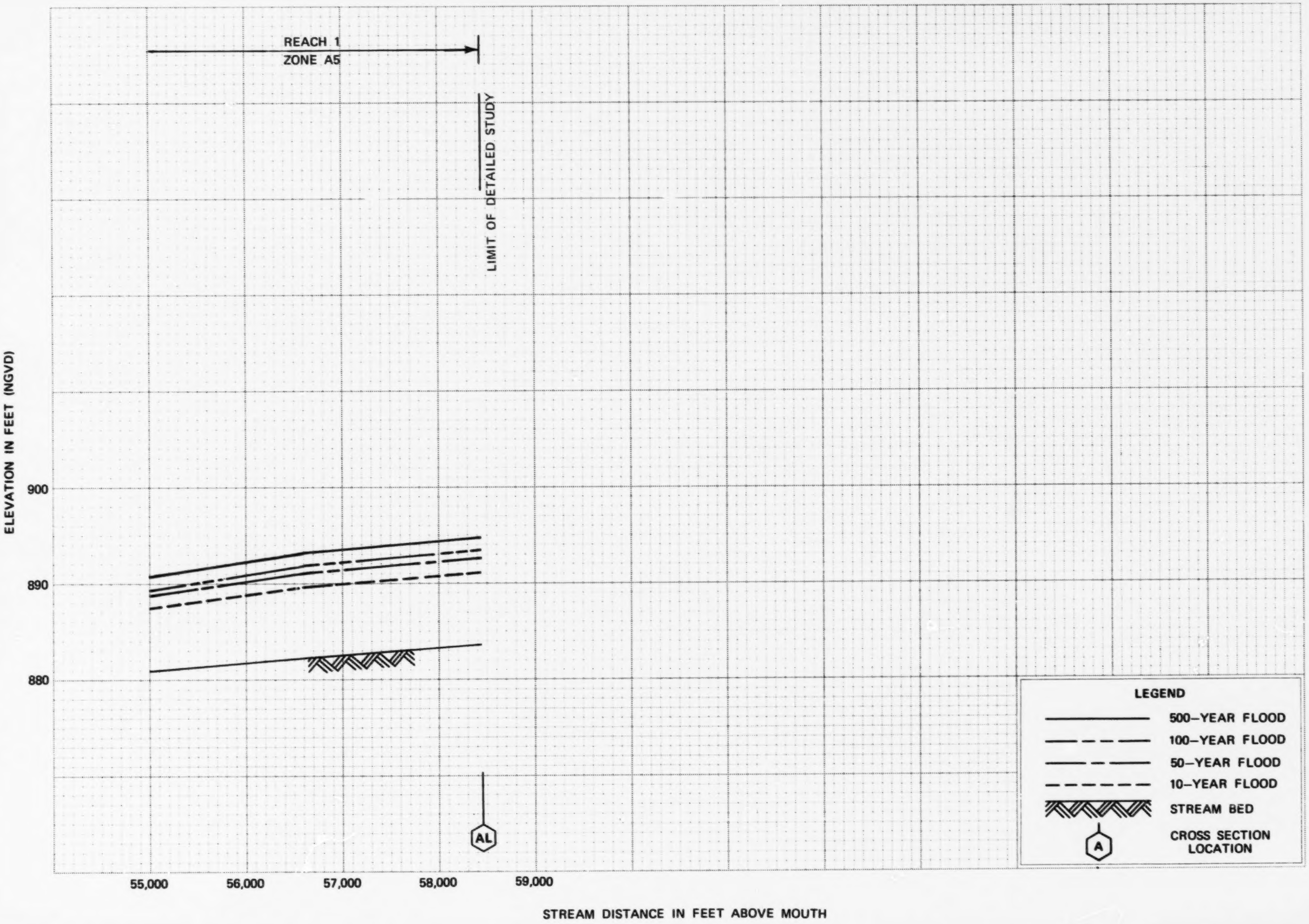


FLOOD PROFILES

EAST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

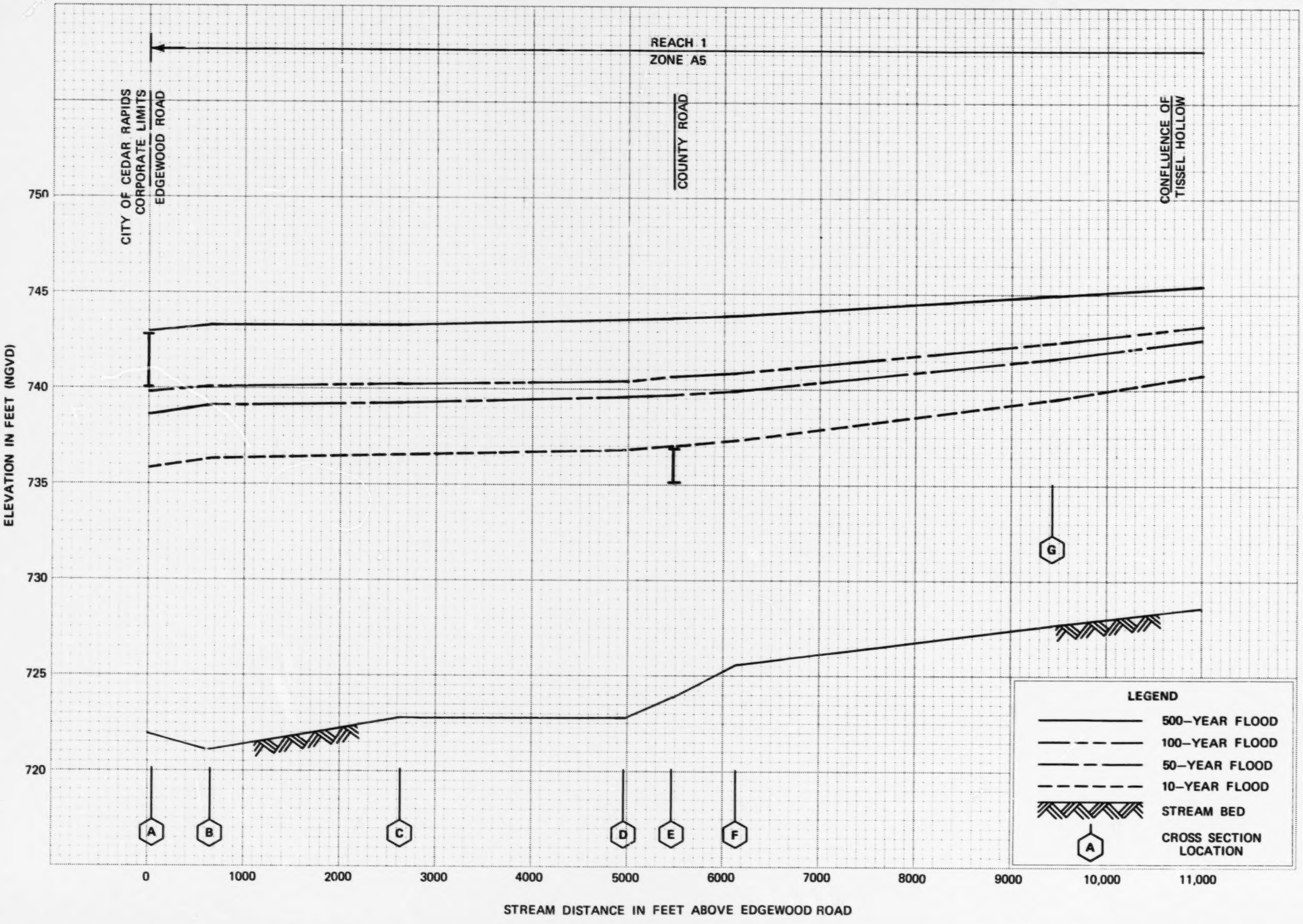
EAST OTTER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

119

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

PRAIRIE CREEK

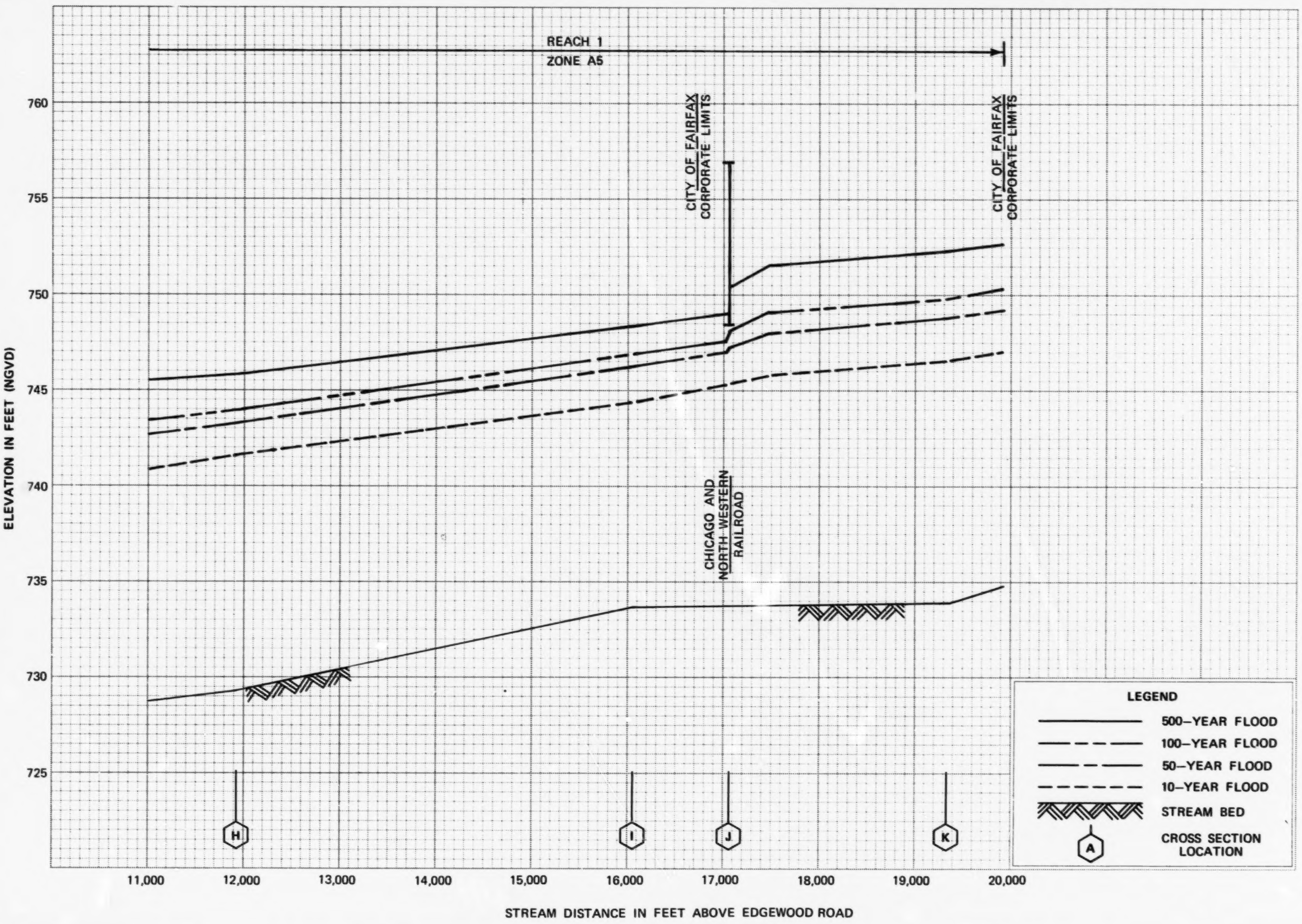
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

120

BEST DOCUMENT AVAILABLE

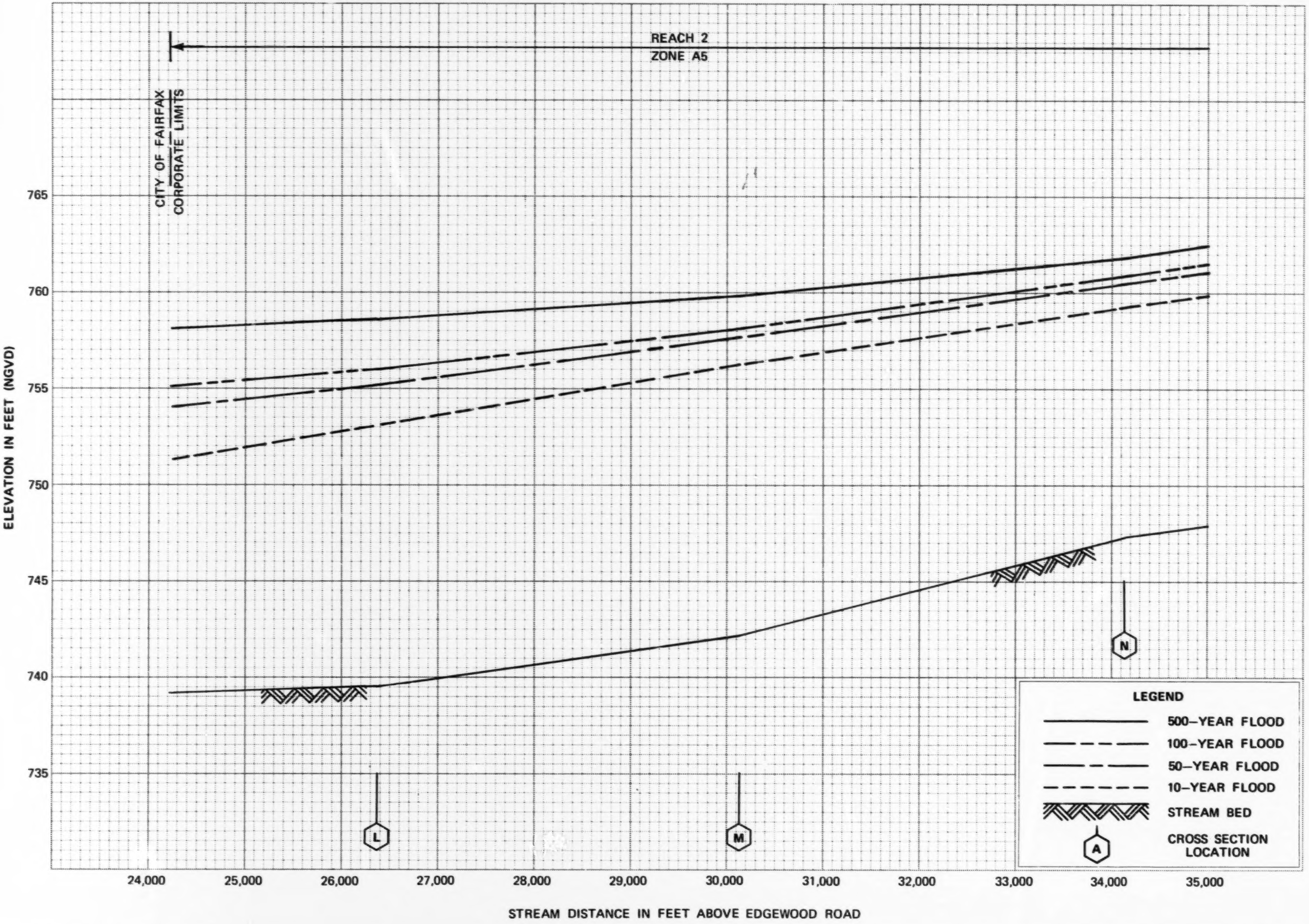


FLOOD PROFILES

PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



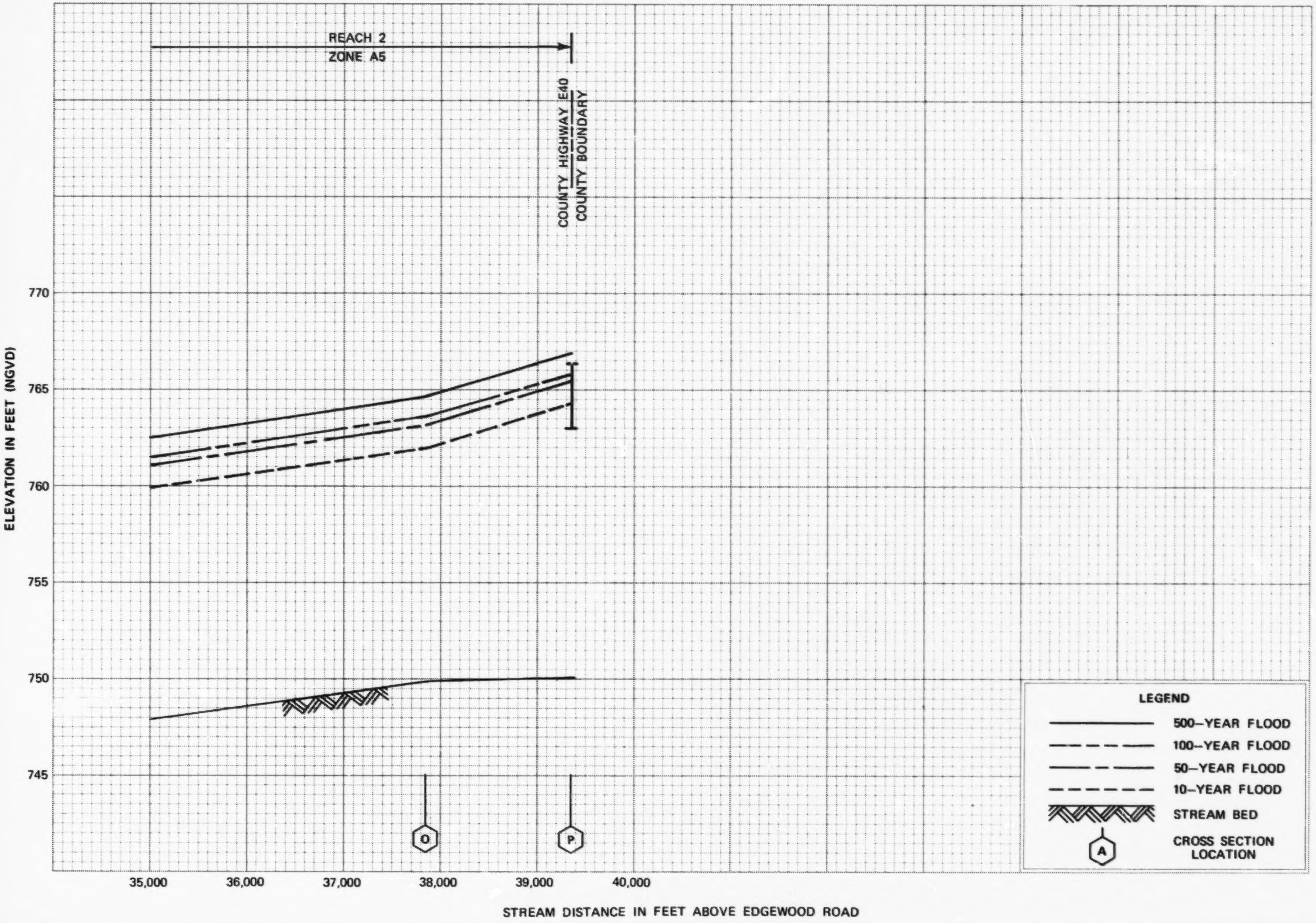
FLOOD PROFILES

PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

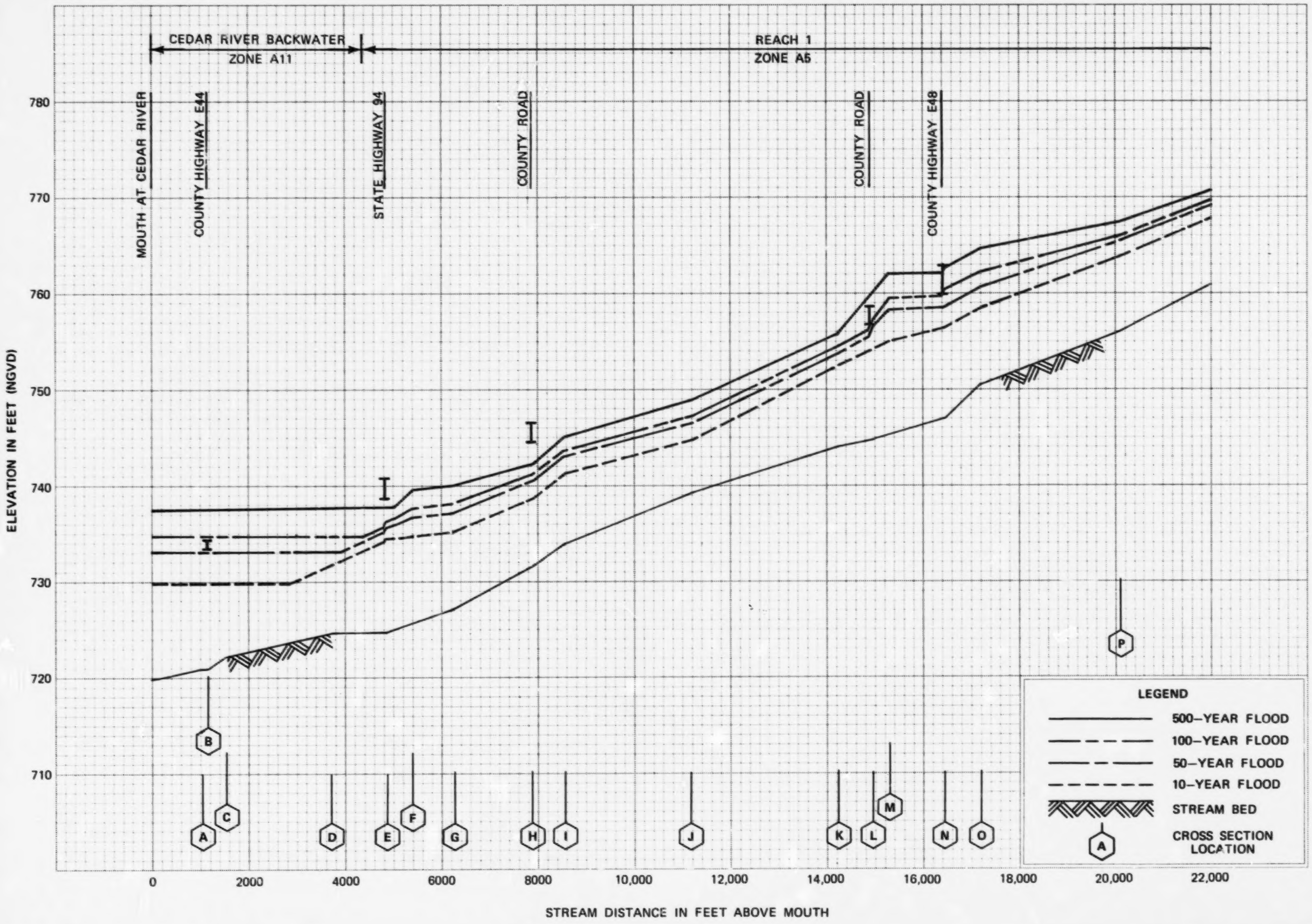
PRAIRIE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

123



FLOOD PROFILES

MORGAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

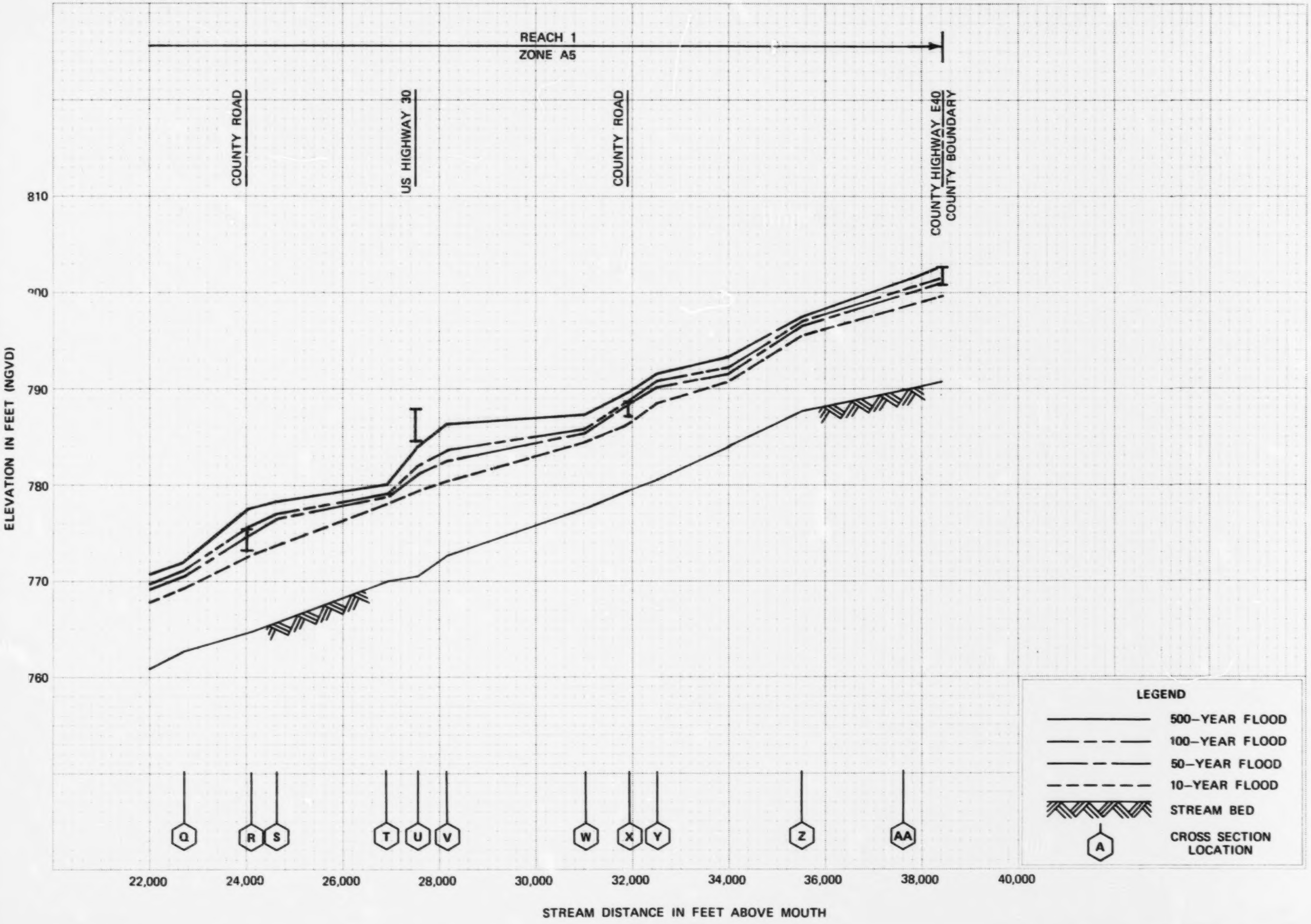
COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

72P

124

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

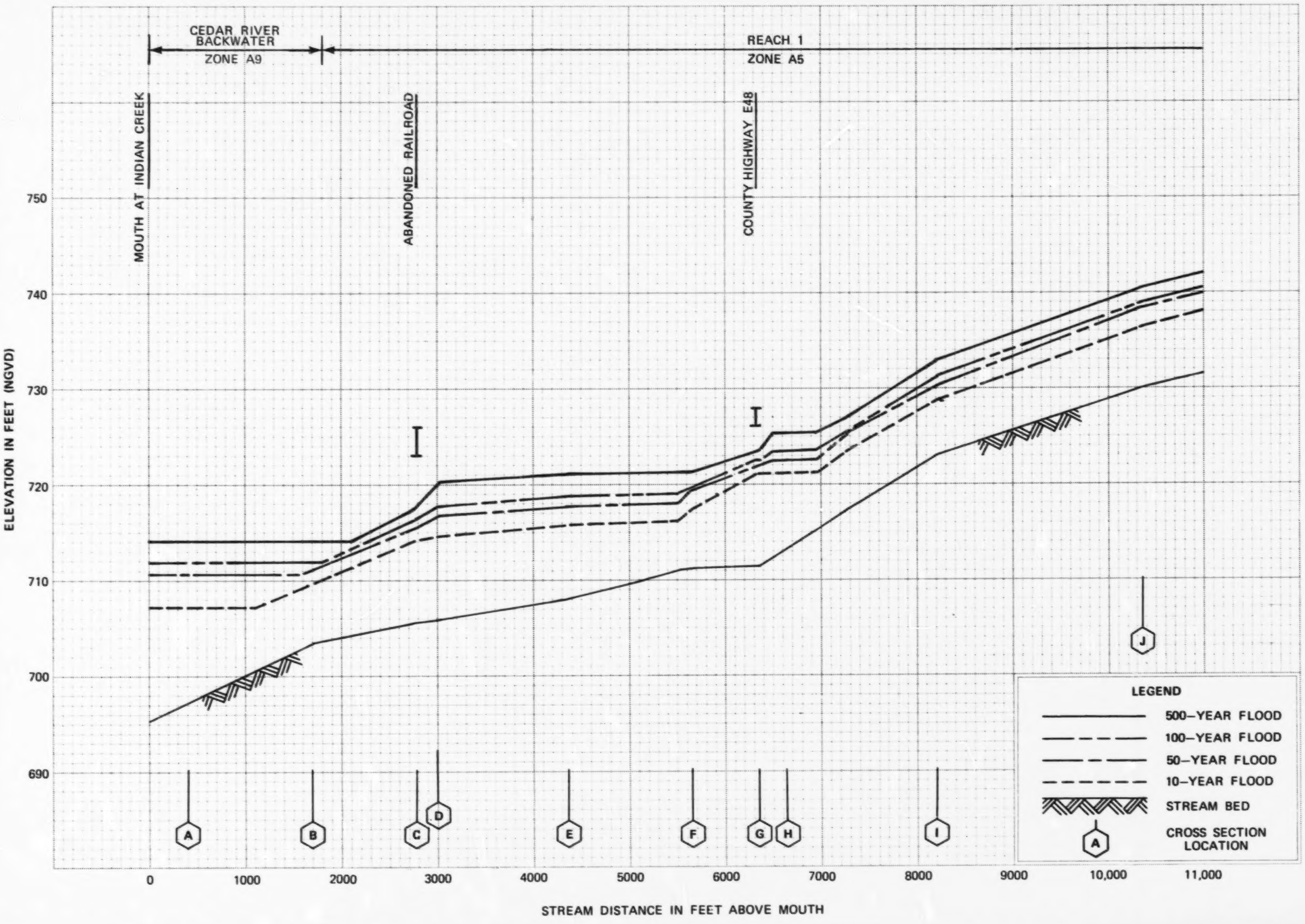
MORGAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

73P

BEST DOCUMENT AVAILABLE

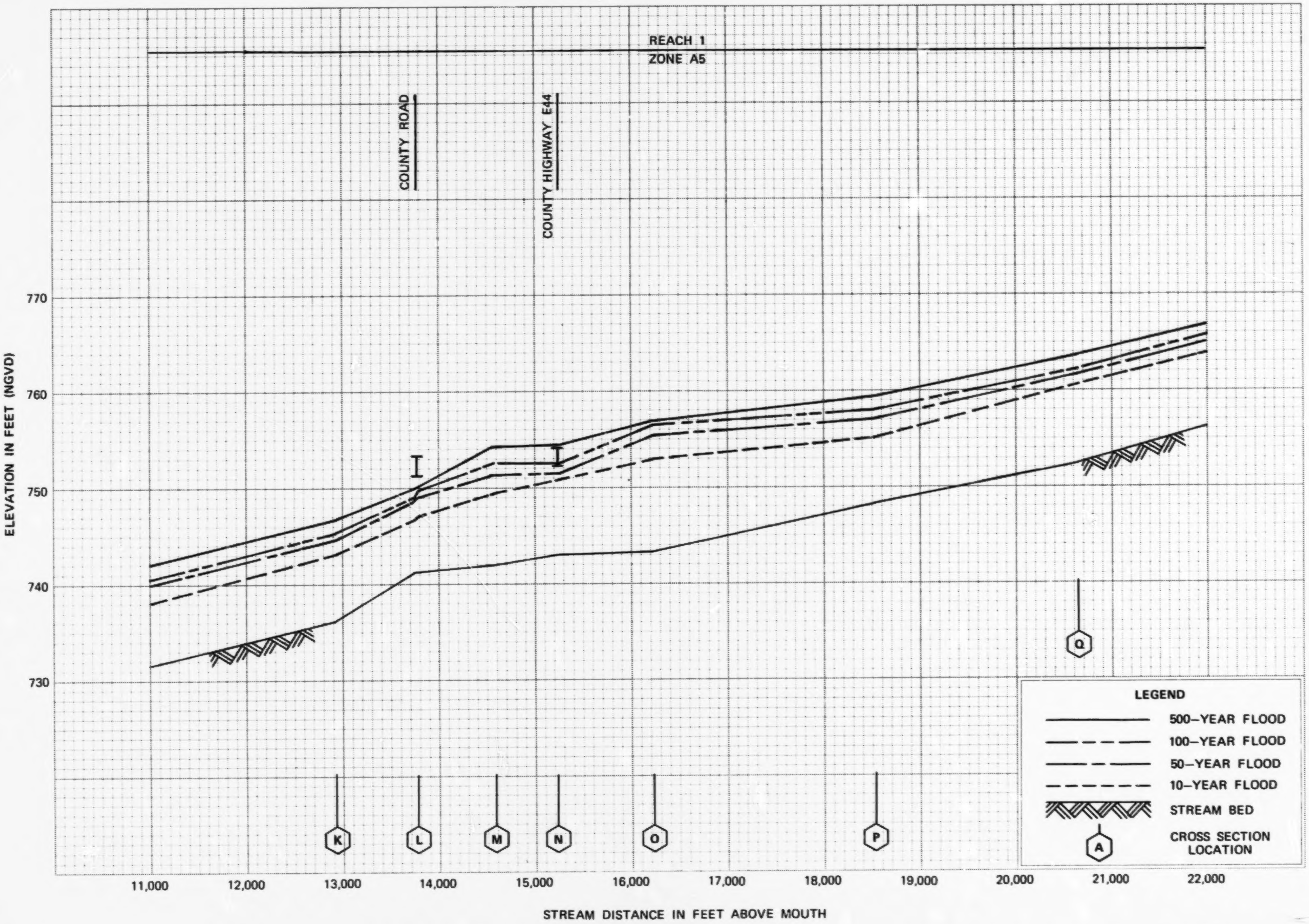


FLOOD PROFILES

SQUAW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

SQUAW CREEK

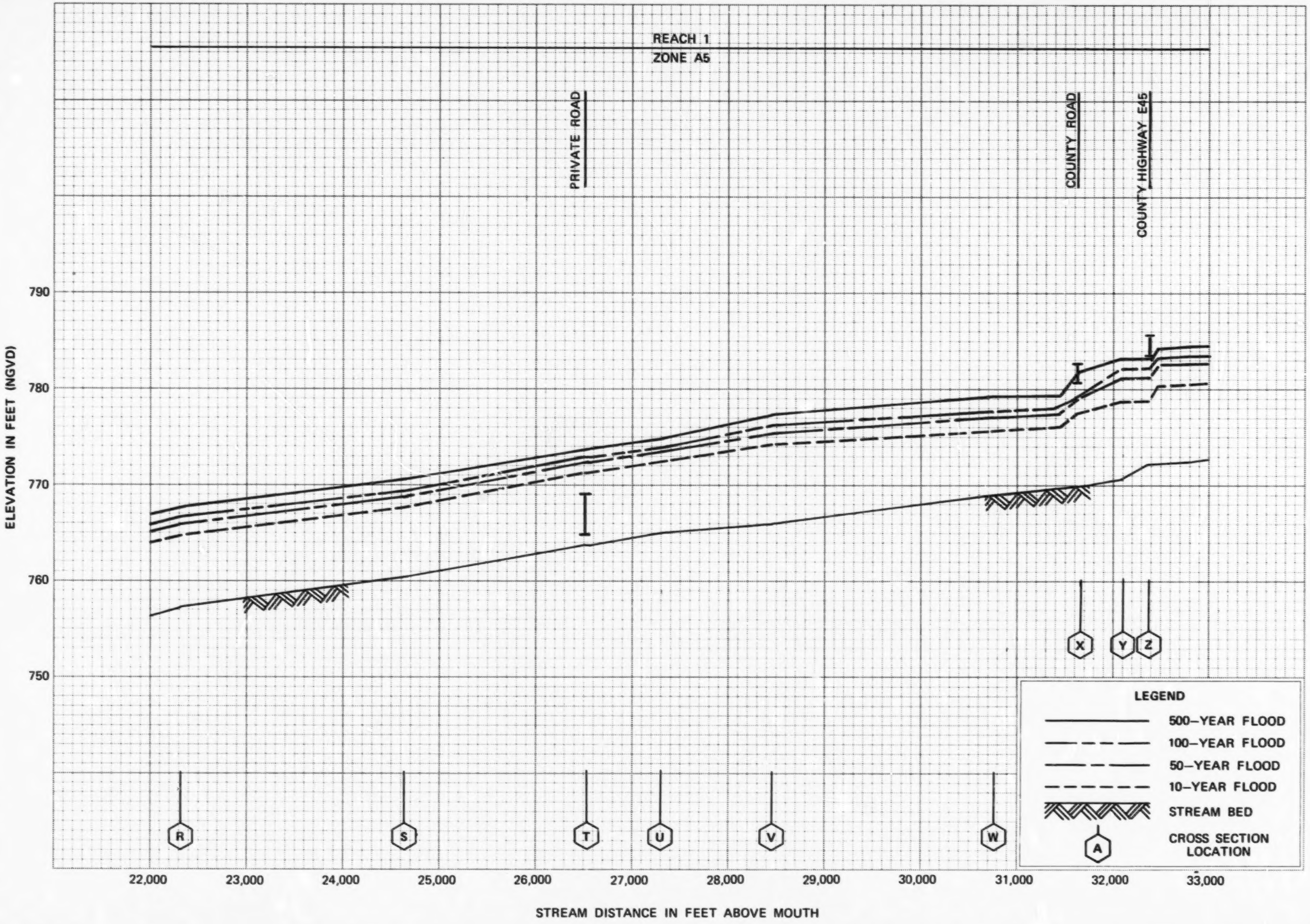
FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

75P

127

BEST DOCUMENT AVAILABLE



FLOOD PROFILES

SQUAW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

76P

128

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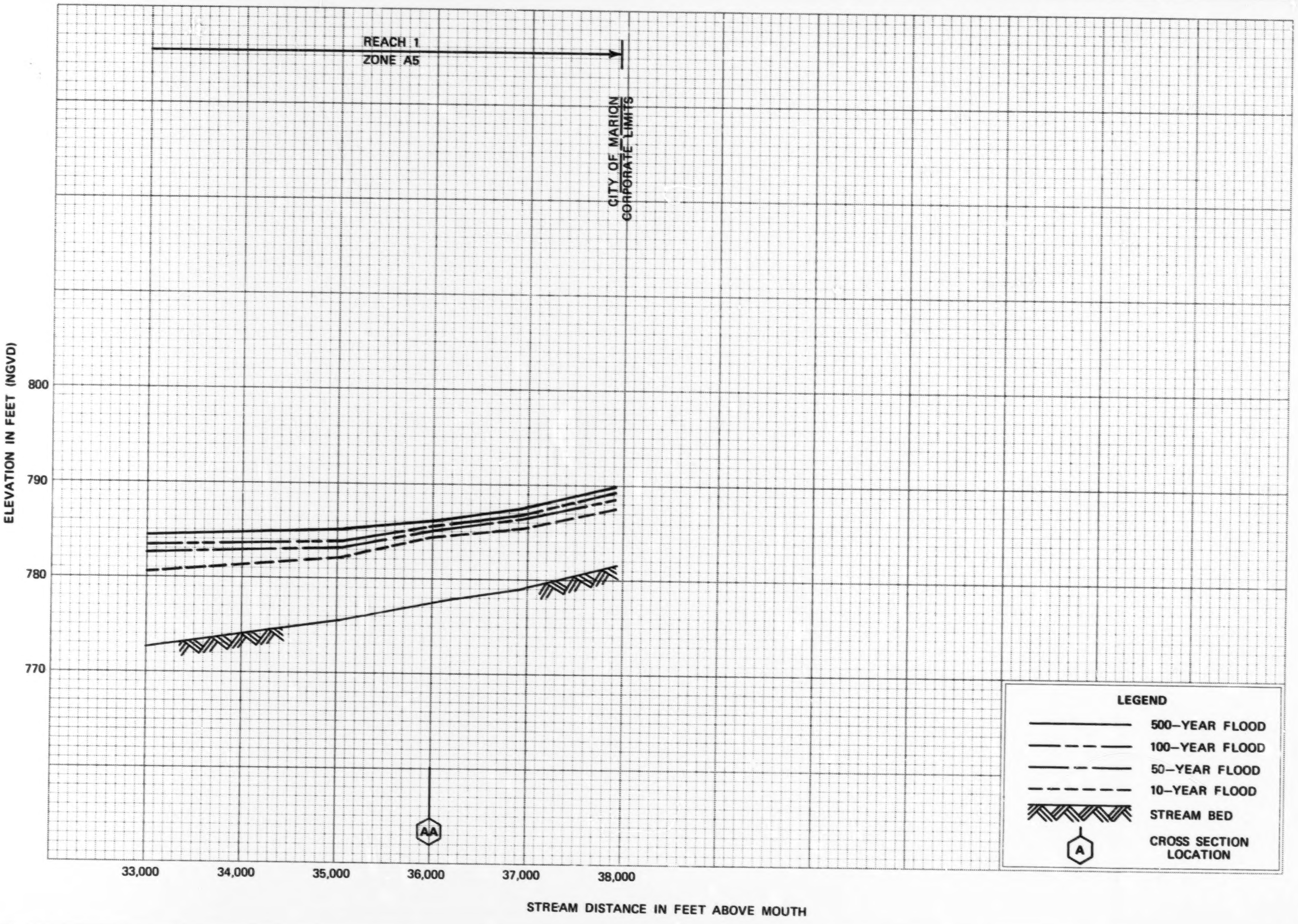
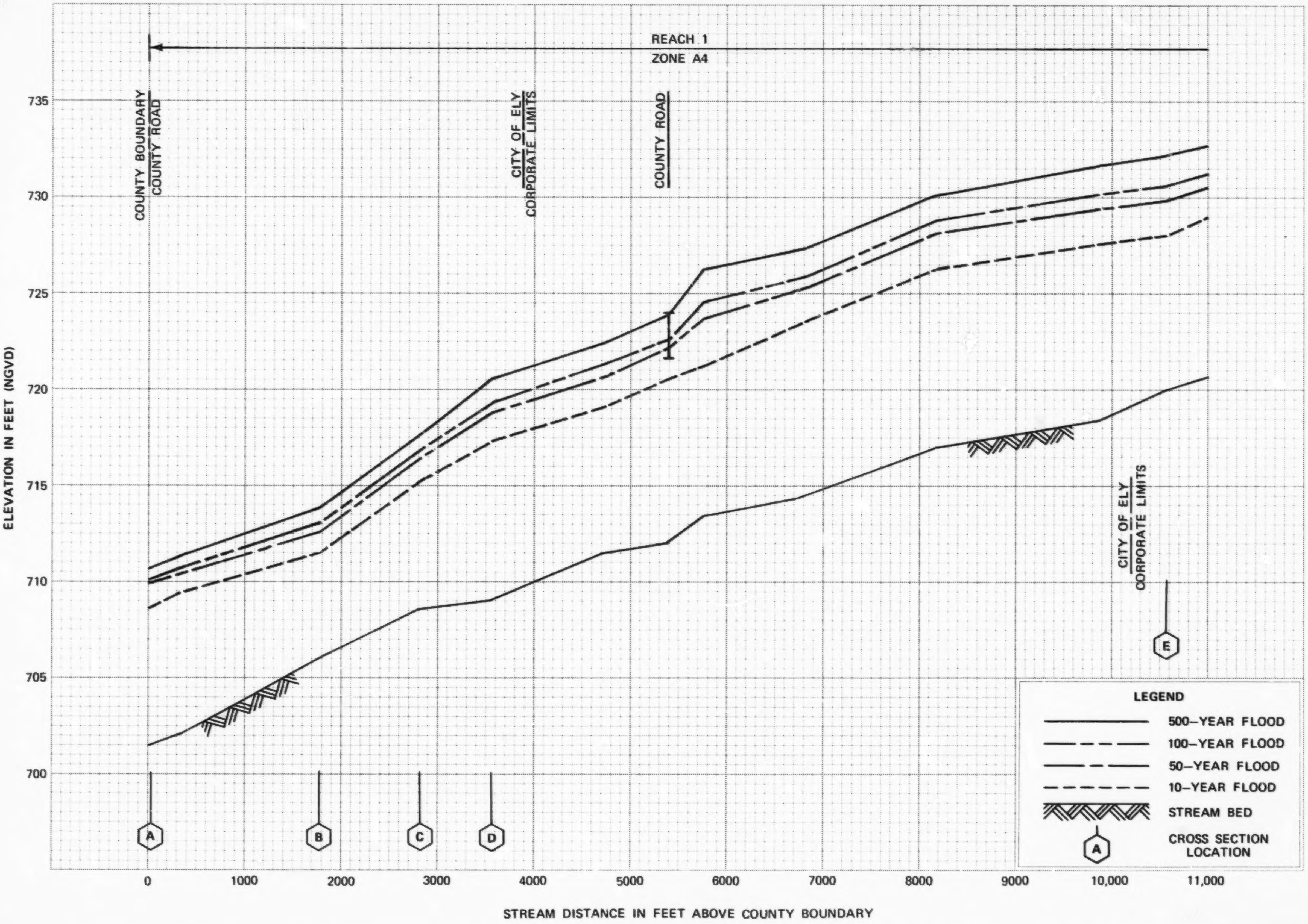


FLOOD PROFILES

SQUAW CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

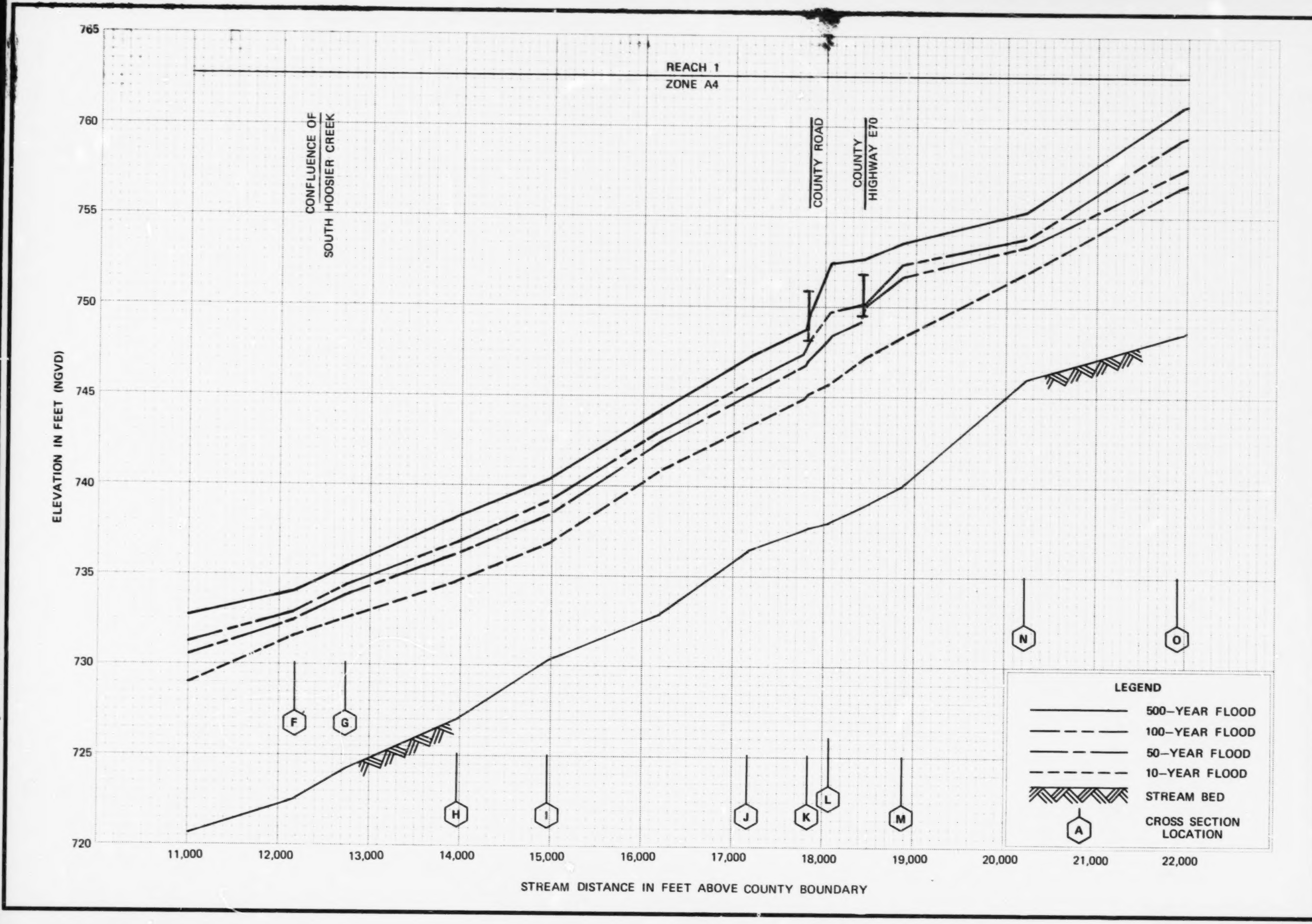


FLOOD PROFILES

HOOSIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

HOOSIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA

(UNINCORPORATED AREAS)

79P

131

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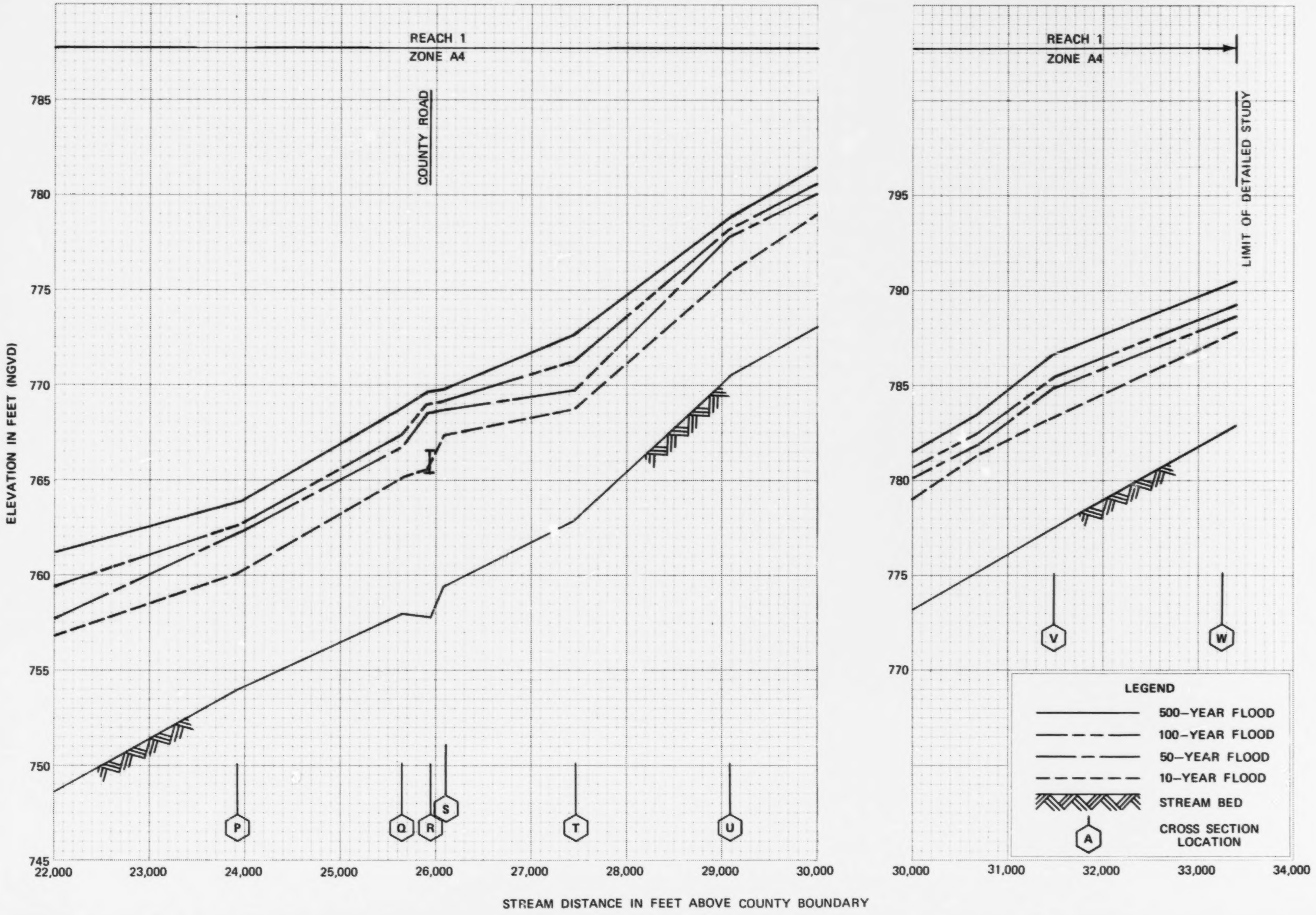

FLOOD PROFILES

HOOSIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

80P

132

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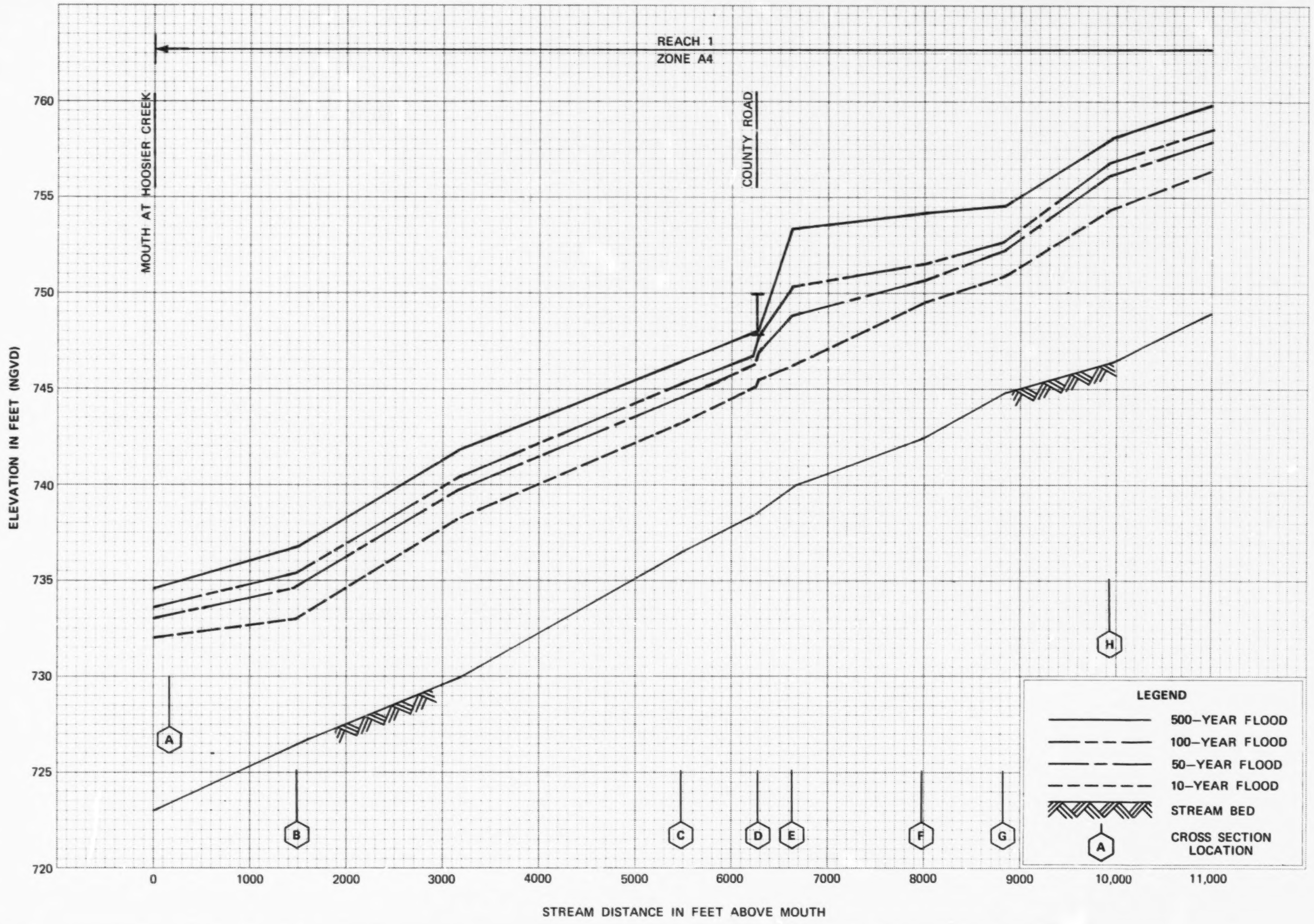


FLOOD PROFILES

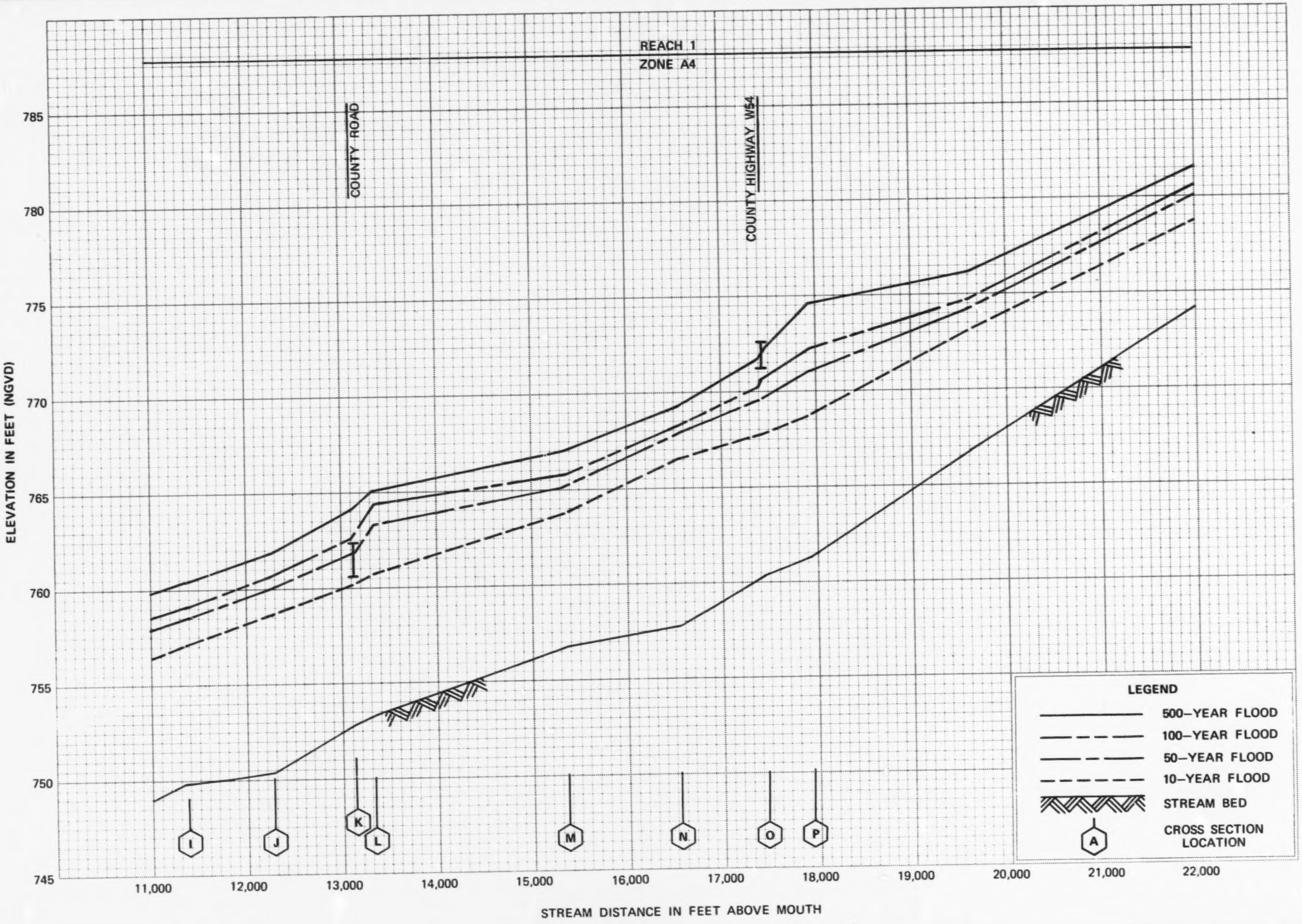
SOUTH HOOSIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

133

BEST DOCUMENT AVAILABLE



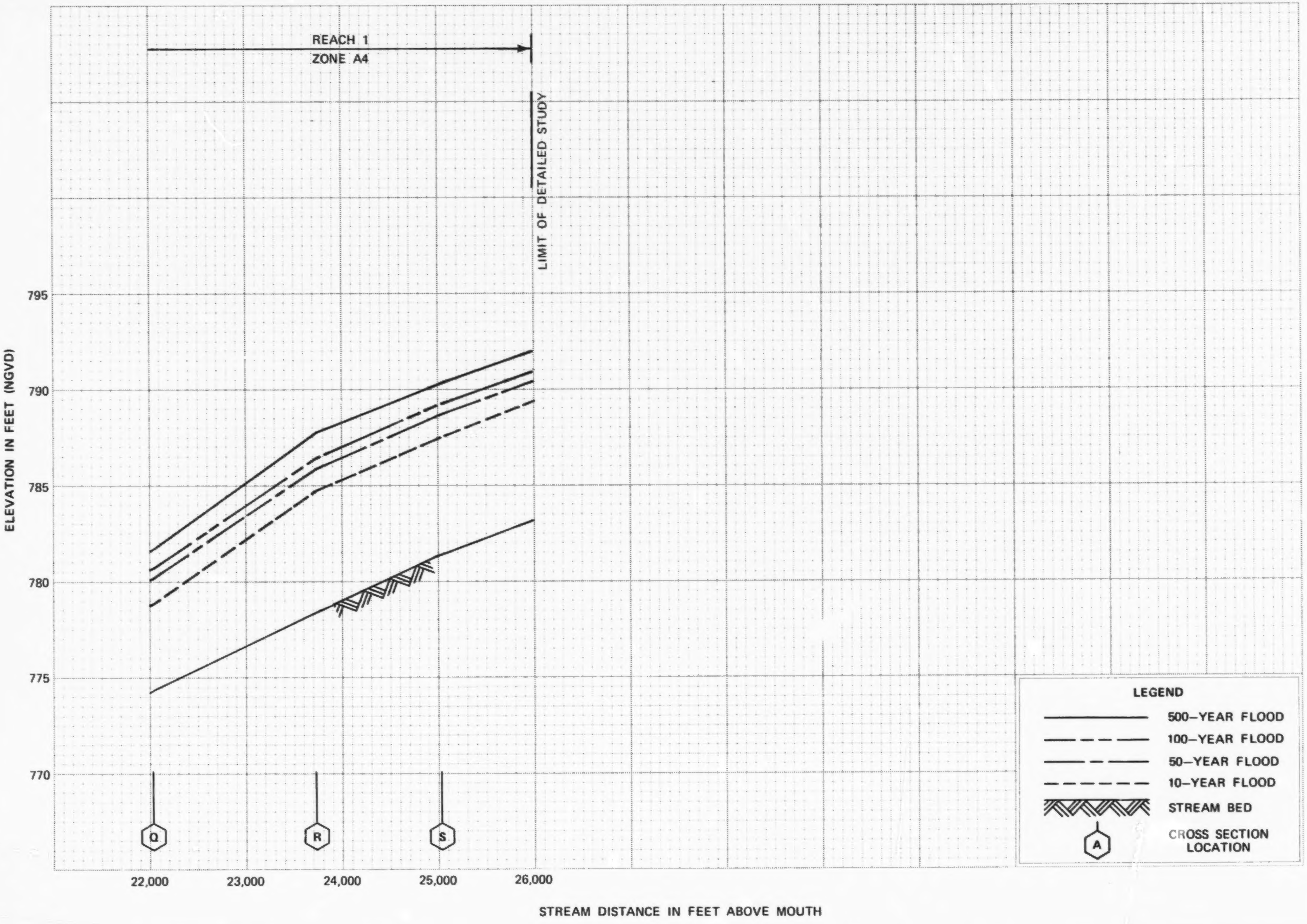
FLOOD PROFILES

SOUTH HOOSIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

82P



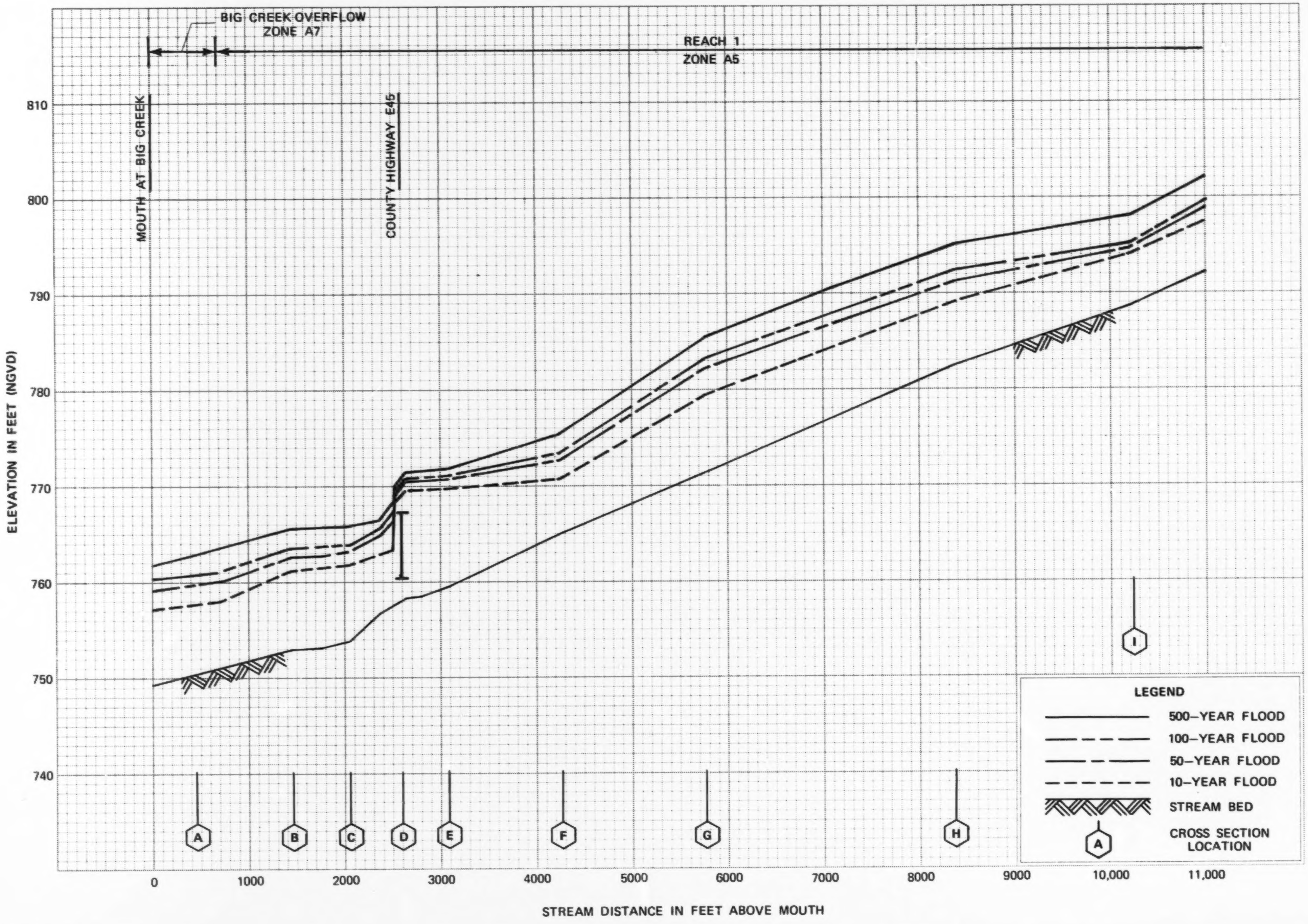
FLOOD PROFILES

SOUTH HOOSIER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

83P



FLOOD PROFILES

SIMMONS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

84P

136

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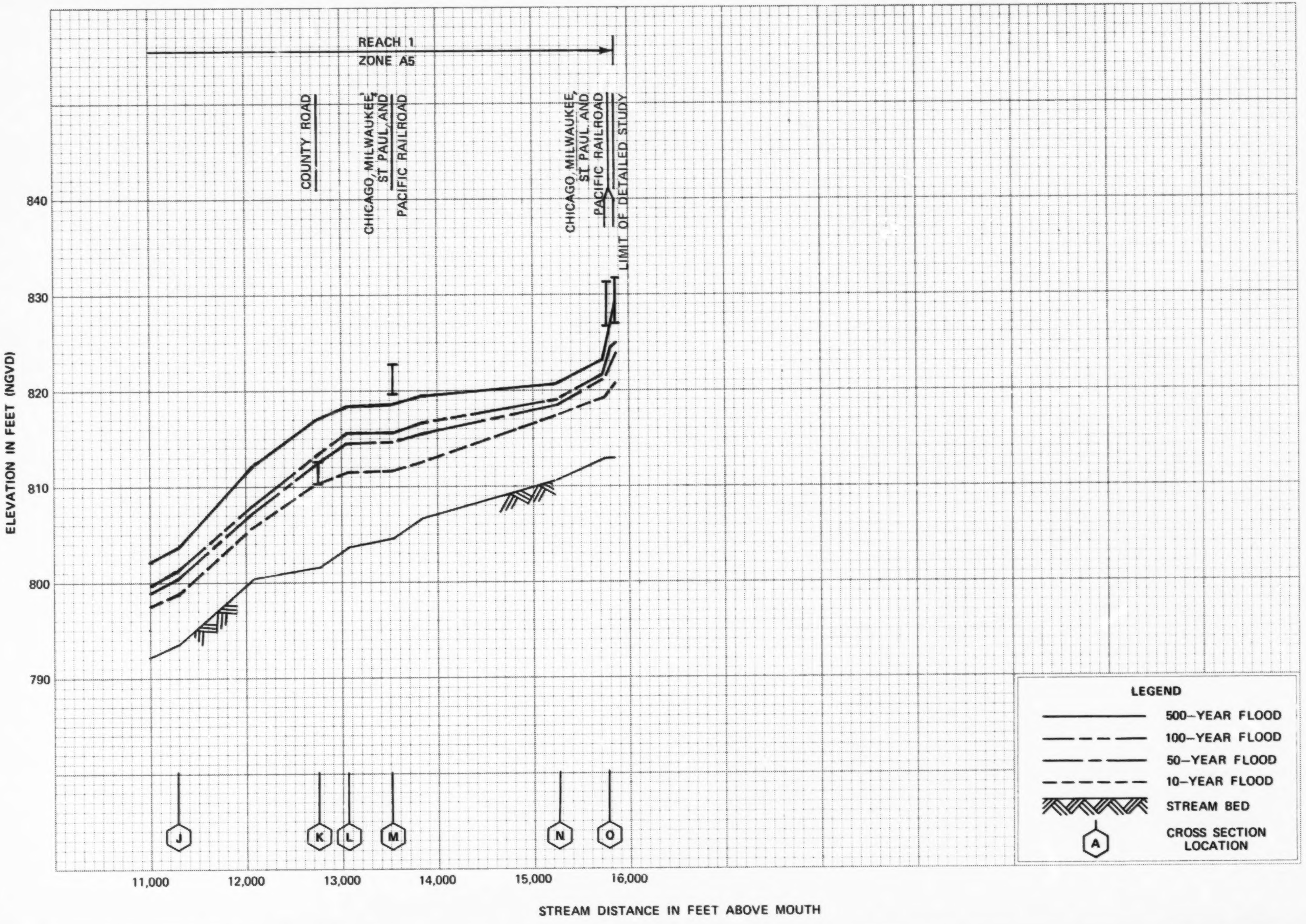
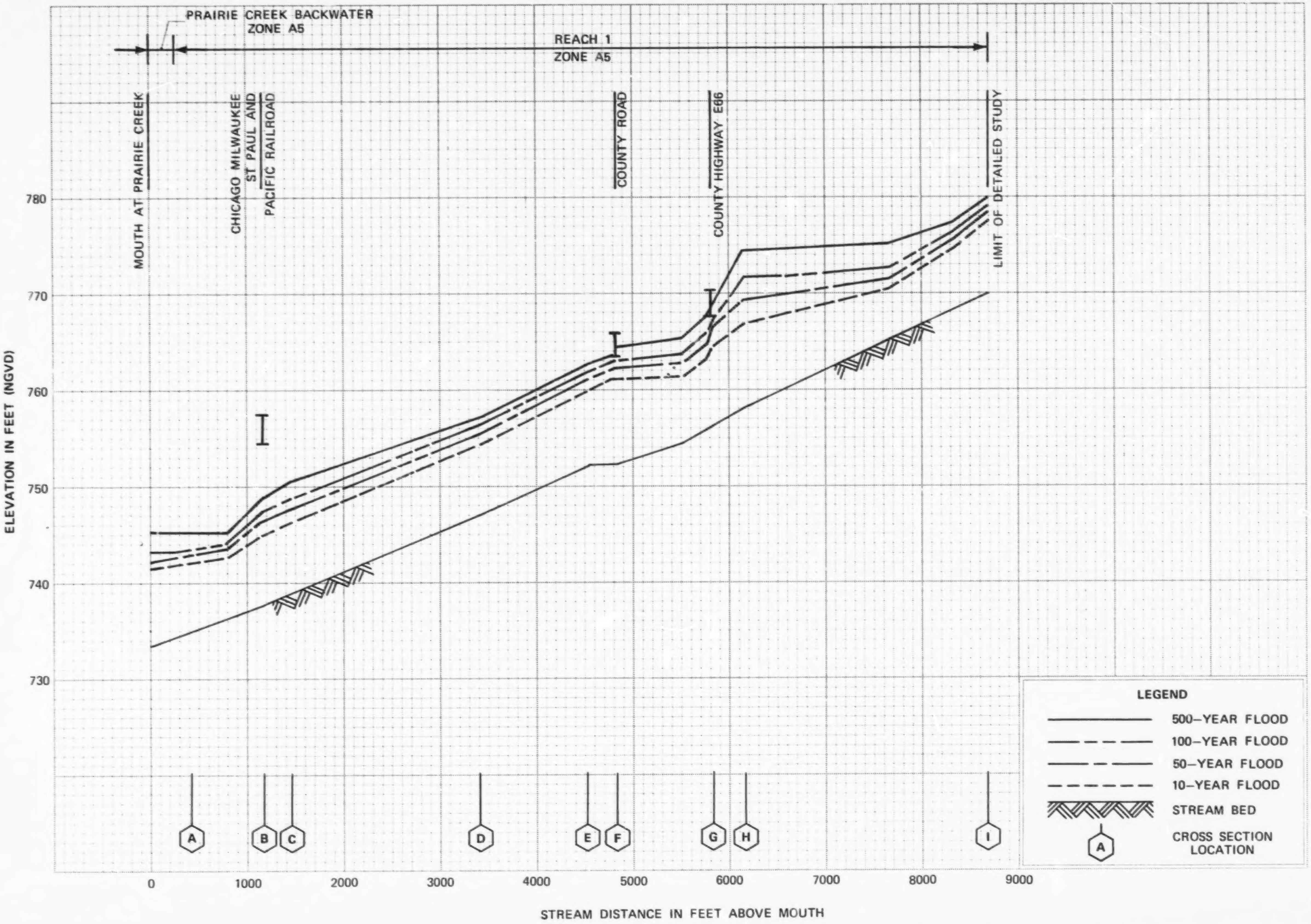


FLOOD PROFILES

SIMMONS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)



FLOOD PROFILES

TISSEL HOLLOW

FEDERAL EMERGENCY MANAGEMENT AGENCY

COUNTY OF LINN, IA
(UNINCORPORATED AREAS)

86P

138

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